April 2000
Volume 68 No 4

Amateur Radio

WIRELESS INSTITUTE OF AUSTRALIA

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- WICEN (Vic) and Y2K
- Hamming in the USA

COVER STORY
New Australian 24 GHz Distance Record

plus
ALARA
WIA, Divisional & Club News
& regular columns

I read, I study, I examine, I listen, I reflect ... Part 2 of
Eric Jamieson VK5LP:
Looking back at an era

WIA Yearbook 2000

Callbook Listings

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Amateur Radio

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Our cover this month

Russell Lemke VK3ZQB, who with Trevor Niven VK5NC and Colin Hutchesson VK5DK broke distance records using Homebrew Narrowband 24 GHz equipment.

(See story page 23)

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Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
National Radio Society
Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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EDITORS COMMENT

The Morse controversy continues

Well who would have thought a year ago we would be looking at the removal of Morse as a HF band licence requirement.

The WIA has canvassed its membership, listened to what they and others said and negotiated with the ACA the reduction in Morse qualification for HF access to 5 wpm and will push for a ZERO Morse requirement at the World Radio Conference in 2002/3. If you wonder why there are articles on learning Morse in this issue it is because it is a mode with a continuing place in Amateur communications and some amateurs wish to become more proficient in its use. The text of the ACA statement is included.

Let's get technical

Now, having had a great John Moyle Field Day, and been exposed to the world above 1GHz, I have to seriously think about building some UHF gear. This will be my step into the unknown for the next few months. Have you decided what yours will be?

One area I would like you all to consider is writing a short technical article/description on your most useful piece of home brew gear. AR is a place for sharing our experiences and helping each other.

If you cannot find a single article with a technical theme in a future issue you will know that 'somebody' did not write any ! If you are not the most fluent writer of English I can pretty it up. Anything from half a page up is acceptable.

Colwyn VK5UE

New Members

November 1999

VK1CW	MR S MIYAKE
VK1LK	MR E S HOCKING
VK2CHK	MR H D KING
VK2TPD	MR P T PRICE
VK2TPL	MR G ROBERTS
VK2TSG	MR S P GREEN
VK2XTX	MR A BERKUTA
VK3BGJ	MR G GALANIS
VK6JR	MR W A RHODES
VK2XRZ	MR P M ROPER
VK2ZRF	MR R FREEBAIRN
VK3AXH	MR I G MCDONALD
VK3HEQ	MR A BARRAND
VK3TS	MR S MARCINCZAK
VK5AKJ	MR R K JOHNSON
VK5DK	MR C M HUTCHESSON
VK5KGB	MR P S GIBBS
VK5KJJ	MR J A JENNER
VK5MW	MR K J ATKINS
VK5ZCF	MR G T SAWYER
VK5ZSN	MR A D SNELL
VK5ZX	MR W J KILPATRICK
VK6AOM	MR D A LLOYD
VK6BRN	MR P G HAVORD
VK6QL	MRS P K DICKS
VK6YEH	MR L IEMI
VK6ZGT	MR G THURSTON
VK7PG	MR P H GIBBS

December 1999

L21171	MR R CEMBRANO
L21172	MR PA LEVARRE-WATERS
L21173	MR A G ARCHER
VK1PY	MR A G PIKE
VK1WV	MR B H BOOTH
VK2AEL	MR A W SPICER
VK2GWI	MRS A TOBBE
VK2JNA	MR D BRAGGE
VK2KPP	MR T SCIFLEET
VK2RN	MR R MILLER
VK2TQE	MR G R ARMSTRONG
VK2TQQ	MR J S MAGNUSSEN

January 2000

VK6ANI	MR N F IVEY

WIA News

Compiled by Richard Murnance VK2SKY
Federal News Coordinator

WIA goes for 5wpm CW

It's now official... the Wireless Institute of Australia favours the reduction of the Morse test requirement from 10 wpm to 5wpm. This policy change was adopted by a unanimous vote of all states and territories. A letter notifying the Australian Communications Authority was sent early this week.

The WIA has been discussing the matter with the ACA since late last year, in the light of similar changes occurring overseas, most noticibly in the USA, Canada, and the United Kingdom.

The position of Morse Code as a requirement for HF access is expected to be more fully considered at the next World Radio Conference in 2002-2003. In the meantime, however, the WIA shares the ACA's concerns about the impact any changes might have on existing reciprocal licencing arrangements with countries that still require the higher speed Morse qualification.

To address this concern, the WIA has proposed, as an interim solution, that the existing Intermediate licence class ("J" and "K" calls) be given the same access to the HF bands as Unrestricted class licencees.

The 10wpm test would for the time being remain in place for those Amateurs wishing to have the Morse qualifications accepted by those countries that have reciprocal licensing arrangements with Australia. But in practical terms, full HF access would be available to those passing the 5wpm test.

We expect to hear from the ACA soon regarding our proposals for 5 wpm Morse Code.

ACA facilitates EME experimentation

Alan Jordan of the ACA comments:

As a result of the gazettal (on 12 Jan) of the Radiocommunications Licence Conditions (Amateur Licence) Determination No.1 of 1997 Amendment 1999 (No.1) the following provision now applies Section 2 (2)

However, if a condition in this Determination is inconsistent with a condition specified in the licence, the condition specified in the licence applies.

This would allow the ACA to apply a condition in an Amateur licence that would allow an Amateur to use a higher level of power than that provided for in the Determination. I understand that this would facilitate EME experimentation. As discussed, such authorisation will be on a justified case by case basis.

The Determination also contains the changes necessary for the Olympics and some very minor corrections to emission modes.

continued next page

LATE BREAKING NEWS

Progress at last on VK 5WPM

See Richard Murnane's report page 6 and President Peter Naish's comments below

Comment

WIA Federal President, Peter Naish VK2BPN

The WIA has received a very positive reply from the ACA regarding our request for a change in the Morse Code requirements for licences that permit operation on the HF bands. This news came to me just as this issue of *Amateur Radio* was about to go to print. The substance of ACA's reply is as follows:

Given the overseas trends, the ACA agrees in principle to implement changes to Australia's Amateur licensing arrangements in relation to the requirements for Morse Code. Australia has established a number of bilateral reciprocal licensing arrangements that are based in part on a 10 wpm. Morse component. Recognizing that it is likely that the international requirement for Morse Code will be considered by the World Radio Conference in 2002/3, the proposed changes are minimal at this time. It is proposed that the Amateur licensing conditions be amended prior to the Sydney Olympic Games to permit Amateur Intermediate licencees to operate to the same extent as currently available to Unrestricted licencees. No changes are proposed to the callsigns of Intermediate licencees who will continue to use distinctive callsigns.

All this may be summarized as a change in the maximum Morse code requirement from 10 wpm. to 5 wpm. for permission to operate with full privileges on the HF bands in Australia. This is a very significant step forward in the Morse Code debate and one that will provide great opportunities to the Amateur radio service. The WIA through its ACA Liaison Committee is continuing to work closely with the ACA in regard to this matter and I expect to be able to give you more details of how and when this change will be implemented very soon.

ar

continued from previous page

Unlawful possession of radiocommunications equipment gets fine and good behaviour bond

The Australian Communications Authority (ACA) Chairman Tony Shaw says that a recent and successful prosecution for unlawful possession of radiocommunications equipment should act as a warning to people who use these devices without a licence.

The ACA was fulfilling its regulatory obligations in conducting the investigations," he said.

"We have a responsibility to ensure that radiocommunications users comply with mandatory standards, codes and licence conditions. Our aim is to protect consumers and minimise disruption to communications services."

The ACA seized unlicensed transmitters after receiving complaints from a commercial television network in Sydney that another station was operating on one of its communications channels.

The unlawful transmitters had been operating in frequencies that were assigned to others, and were being used as private communications channels.

The prosecution followed extensive investigations by ACA Inspectors and resulted in the seizure of twelve transmitters from various locations. A Brief of evidence was forwarded to the Director of Public Prosecution.

The owner of the base equipment, who had been warned by the ACA on previous occasions, pleaded guilty in the St James Magistrates Court to three charges of unlawful possession of a radiocommunications device. He was fined $2000 and given a $5000/two year good behaviour bond as well as forfeiting to the Commonwealth transmitters worth over $10,000.

(ACA web site, 9 March, http://www.aca.gov.au/media/2000/07-00.htm)

Olympics Callsign AX2000 on the air...

The Sydney Olympics special event callsign, AX2000, had its first workout last month.

The New South Wales Division of the Wireless Institute of Australia has authorised a number of NSW Amateur Radio clubs to use the callsign during 2000. The Manly-Warringah Radio Society had first bite of the cherry, activating the call in the CQ WW WPX contest on the weekend of 25-26 March. The club will continued to use the callsign through the end of March.

This month, the Wahroonga Amateur Historical Radio Association will be active as AX2000 / IMD on International Marconi Day, 29th April .

'Other New South Wales radio clubs will activate the call at various times throughout the year, and AX2000 will be running from the WIA (VK2) Divisional headquarters during the Olympic and Paralympic Games. Visitors may apply to operate the station by contacting the VK2 Divisional office.

Dick Smith balloons across the Tasman with Amateur Radio

Australian adventurer Dick Smith VK2DIK and his co-pilot successfully completed the first ever crossing of the Tasman Sea, from New Zealand to Australia, by hot air balloon, with a little bit of help from Amateur Radio.

The main challenge was that the flight was east to west, against the prevailing winds.

The VK2 Division of the WIA operated an Amateur Radio station (VK2AWI / p) at the Australian Geographic headquarters at Terrey Hills in northern Sydney. This station was commissioned by VK2 Division Special Projects Officer, Stephen Pall VK2PS, and James VK2JN, Ted VK2FLB, Richard VK2SKY, and Dom VK2JNA of the Manly-Warringah Radio Society, who helped to run the station, along with a number of other Sydney Radio Amateurs.

VK2AWI's primary role was to provide safety communications for the flight, though Dick did indulge in some rag chewing, especially with schoolchildren who visited "Mission Control". For the final hours of the flight, Dick used Amateur Radio as his sole means of communication.

To celebrate the success of the mission, the VK2 Division ran a special event station, VI2TAS, which proved very popular on the bands.

The mission raised $200,000 for the Exodus Foundation, half of which was donated by Dick, the rest by advertising mogul John Singleton, who had bet Dick that he couldn't do it. Dick also used the flight to promote his new Australian food company, Dick Smith Foods.

This is not the first time that the WIA and Amateur Radio have been used in this way; the WIA NSW Division also assisted Dick and John with radio communications during the first ever non-stop crossing of Australia by hot-air balloon, back in 1993.

Sydney Games Radio Award

The New South Wales Division of the Wireless Institute of Australia has announced a new award to commemorate the Sydney 2000 Olympic and Paralympic Games.

The aim of the Sydney Award is to commemorate the Sydney Olympic and Paralympic Games The award is made for contacts between amateur Radio Operators anywhere in the world and Amateur Radio operators in the state of New South Wales (VK2 or AX2), Australia.

The award is available in three classes:

Bronze: Is available for contacts with four VK2stations.

Silver: Is available for contacts with eight VK2 Stations

Gold: Is available for contacts with 12 VK2 Stations and must include a contact with the official Olympic station, AX2000, during the Games.

The award is valid for contacts made between 14th September 2000 (the date of the first Olympic soccer match) and 29th October 2000 (the date of the closing ceremony of the Paralympic Games).

The cost of the award is yet to be determined.

The Certificate will be a full colour photograph of the Olympic stadium at Homebush, suitably emblazoned with the appropriate logos, contact info etc.

For more information about the award, please contact the New South Wales Division of the WIA by one of the following means:

Postal: Wireless Institute of Australia (NSW Division), PO Box 1066, Parramatta NSW 2124

Phone: +61 2 9689-2417

Fax: +61 2 9633-1525

Email: vk2wi@ozemail.com.au

US Senate considers Amateur Radio Spectrum Bill

The Amateur Radio Spectrum Protection Act bill now has supporting legislation in the US Senate. Idaho Sen Michael Crapo has introduced a bill that mirrors the house bill, HR 783. The Senate measure has been designated S 2183.

"In introducing this bill, we want to do something for Amateur Radio in return for all the good it has done the people of Idaho and elsewhere in the US by providing a reliable means of backup communication in times of emergency," Crapo said. He also pledged to promote the bill in the Senate.

Like the House version, the Senate bill, if enacted, would require the FCC to provide equivalent replacement spectrum should it ever be necessary to reallocate Amateur Radio frequencies for some other purpose.

The new Senate legislation was introduced with bipartisan co-sponsorship from Democratic Senators Daniel Akaka and Blanche Lambert Lincoln, and Republicans Susan Collins, Bob Smith and Olympia Snowe. The bill's introduction comes on the heels of a visit to Capitol Hill by the recently elected ARRL President Jim Haynie, W5JBP, and First Vice President Joel Harrison, W5ZN.

So far, the House version of the spectrum bill has drawn bipartisan support, with 140 cosponsors to date, and has met with no opposition. However, Congress, and the all-important House and Senate Commerce committees, have been preoccupied with non-telecommunications matters and the Amateur Spectrum Protection Act has not yet moved out of committee. The new Senate bill provides additional motivation for the Congress to consider the legislation.

(ARRL Bulletin ARLB013, dated 8th March 2000)

ACA Document updates

The Policy Information Paper (PIP) Amateur Licence Information Paper has been updated to reflect recent amendments to the Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997. (http://www.aca.gov.au/publications/info/amateur.htm)

The Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997 has been amended to incorporate recent amendments. (http://www.aca.gov.au/legal/determin/lcd/amateur.htm)

The ACA Information Paper, Licensing Arrangements for Radiocommunications Services Operating in the Broadcasting Services Bands, confirms the continuation of the Amateur Television "drop through" on UHF TV channel 35. The document also notes that existing licences will be maintained in the range 45 - 52 MHz until 9 September 2008; this will be of interest to six metre enthusiasts, as Amateur radio is a secondary service in the 50 – 52 MHz segment of that band. (http://www.aca.gov.au/publications/info/broadass.htm)

The ACA has also added or updated a number of consumer fact sheets, which can be downloaded from their web site. Some of those of possible interest to Amateur operators are:

- Bringing Communications Equipment into Australia
- Use of Royal Flying Doctor Service Frequencies by Outback Travellers
- Citizen Band Radio
- Comparison of Radio Equipment
- Distress Beacons
- Radio Propagation
- Good Operating Practices for HF Users

The complete list of consumer fact sheets can be found at http://www.aca.gov.au/consumer/fsheets/consumer/index.htm

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Internet access to be available through power lines

One technology to keep your eyes on... this has already been tried in the UK, where NorWeb received heavy opposition from the Radio Society of Great Britain and other HF users who experienced interference from the power line communications system.

German communications company Veba has announced plans to launch its powerline communication (PLC) product by the end of the year.

PLC will enable customers in Germany to conduct telephone calls and dial into the Internet directly via household powerpoints or plugs, rather than through telephone connections.

Veba says its telecoms unit, Veba Telecom, and its PreussenElektra power utility had successfully completed field testing for high-speed voice and data transmission via electricity distribution networks.

The tests, carried out in eight households, showed that telephony and Internet access could be successfully carried out via power lines.

Veba says extended tests will be carried out with several hundred households, after which the product will be launched by Avacon, a unit of PreussenElektra, before the end of the year.

The company predicts that Internet access via powerline communication will cost less per month than access via traditional telecommunication networks.

The key to the technology is a small box placed next to the electricity counter. The box enables a household's main power lines to be used for voice data transmission with the same quality as traditional fixed telecom lines.

PreussenElektra was scheduled to unveil the new product at the upcoming CeBIT computer trade fair in Hanover, north Germany in late February.

But Veba is not the only company developing such technology. Rival power group RWE is also expected to unveil its own product at CeBIT.

And German electrical engineering giant Siemens has teamed up with the regional power utility Energie Baden-Wuerttemberg (EnBW) to form a joint venture in powerline communications.

The future market prospects for such a project were "excellent", Siemens and EnBW said earlier this month. And they planned to launch their own finished PLC product before the end of the year.

(adapted from a story on the ABC News Web site, 23 Feb 2000)

ar

LATE BREAKING NEWS

Progress at last on VK 5WPM

WIA President Peter Naish VK2BPN has received from Alan Jordan of ACA a reply to the WIA's letter requesting a change to the licensing conditions in regard to 5 wpm. Morse Code.

The reply includes the following statement:

Given the overseas trends in relation to this matter, the ACA agrees in principle to implement changes to Australia's Amateur licensing arrangements in relation to the requirements for Morse Code.

The proposed changes reflect that Australia has established a number of bilateral reciprocal licensing arrangements that are based, in part, on qualifications that include a 10 words per minute Morse code component. In recognition that, it is likely that the international requirement for Morse code will be considered by the World Radio Conference in 2002/3, the proposed changes are minimal in scope.

It is proposed that the Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997 and other Amateur documentation will be amended prior to the Sydney Olympic Games to reflect the following:

- *The Amateur Intermediate Station Licence will authorise operation to the same extent as that currently authorised under the Amateur Unrestricted Station Licence.*
- *No changes are proposed to the current qualification requirements for the Amateur Intermediate Station Licence.*
- *No changes are proposed in regard to the Amateur Unrestricted Station Licence, and*
- *Amateur Intermediate Stations will continue to be issued with callsigns that differentiate the stations from Amateur Unrestricted Stations.*

In order to properly implement the above changes, the ACA seeks the assistance of the Wireless Institute of Australia to update, where appropriate, Regulation papers that contain questions reflecting the current arrangements relating to Amateur Intermediate Stations.

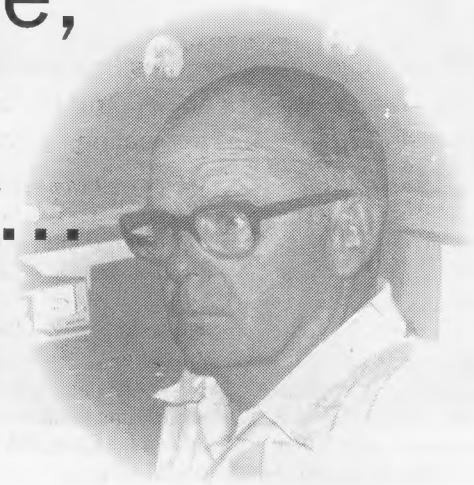
Your earliest advice in relation to the extent of any necessary changes would be appreciated.

Well, there we have it! At last significant progress and a 5 wpm maximum code requirement!

The changes proposed are in line with the WIA request and demonstrates again our excellent working arrangements with the ACA.

Richard Murnane VK2SKY
WIA Federal News Coordinator
pr@wia.org.au

I read, I study, I examine, I listen, I reflect ...



Part 2 of

Eric Jamieson VK5LP:
Looking back at an era

The arrival of SSB

The early 1970s saw most amateurs change from AM to SSB. Amateurs were using HF transceivers with transverters for the now 52 MHz band and for 144 MHz. These combinations were very successful, but they slowly gave way to dedicated VHF all-mode transceivers, which were now appearing with well known brand names such as Yaesu, Kenwood and Icom. The early models lacked a few facilities to be found on HF transceivers, but following demand they soon appeared with items such as noise blankers, IF bandpass tuning, digital readout, CW filters, FM modules, improved sensitivity and selectivity, thus rivalling their HF counterparts.

In looking back over a period of 38 years as an operator on the VHF bands, it must be said it has been a period of great excitement and change and I am pleased to have been part of that era

Having thus established the first essentials for VHF operation, that of 52 and 144 MHz, amateurs were now turning their attention to the higher bands. For many, the next step was to operate on 432 MHz and to meet this demand 432 MHz transceivers appeared for those able to afford them, others continued to use transverters (commercial and home-brew). For a brief period I even ventured on to the 576 MHz band using a QQE3/20 valve running about 15 watts to a 32 element phased array antenna, courtesy of John VK5QZ!

Gradually I moved on. I was now able to run 100 watts on 144 and 432 MHz. In 1970 I constructed another pride and joy with a pair of 811A valves in a 50/52 MHz linear amplifier. It seemed to be the only one of its type at the time so I had to design the circuit. A grounded-grid amplifier would have been the best bet but I was forced to use a grid-driven amplifier because the 50 MHz transceiver could only deliver 12 watts of drive. This meant the valves had to be neutralised, a somewhat tricky problem but one which I eventually overcame. In operation, it acts just like a solid state amplifier; the directly heated valves are instantly ready at the flick of the filament switch. My *modis operandi* is to use the transceiver barefoot and if more power is required during a contact, I simply stop talking for a moment, flick the switch and resume talking - back on air in two seconds!

After almost 30 years, the linear is still in use and has never required a single repair or adjustment in all that time. It runs a nominal 100 watts output, which can be easily talked up to 200 watts. By changing to a higher voltage power supply it will deliver almost 400 watts of clean signal but has never been used at that power. The only time 200 watts was used occurred during the last solar cycle when I wanted to make sure I worked several countries in the Caribbean and to Africa.

FM and repeaters

While all these things were going along on the various VHF bands, FM was making inroads into the amateur's realm. In the 1960s ex-commercial gear, such as a Pye Reporter, were being modified to work on 144 MHz with about 15 watts and usually three channels, A, B and C. I had one of these mounted in my Holden station sedan together with a 15 watt AM rig. Along with FM came repeaters and then a plethora of FM transceivers for base station, mobile and hand-held operation. The FM repeater network exploded and eventually virtually covered most of the continent.

With the ready availability of so much FM equipment, usually at a price lower than all-mode rigs, came the mass desertion of

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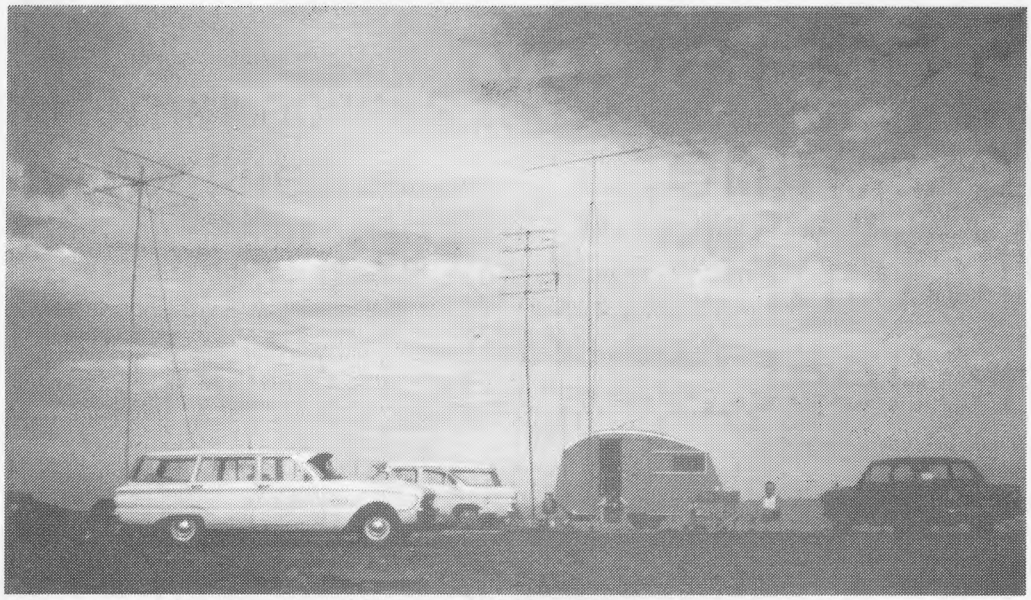

Photo 1: Portable operation with Barry VK5ZMW and Des VK5CU. Note that we didn't stint on antenna performance on 50, 144 and 432 MHz

continued from previous page

operators from the low end of 144 MHz in particular. That portion of the band went through a period of virtual stagnation as amateurs switched to FM, one reason being that it was rare not to find another station on FM or a repeater, so you could always be assured of a contact.

However, there were always the stalwarts who stayed on SSB and CW and today their numbers have increased. The weak signal operators are constantly seeking improvements to their equipment, constructing better and larger antennas and reading the weather maps for indications of improved propagation. These same operators are now also on 432 and 1296 MHz. They are to be found along the southern coastal regions of Victoria, South Australia, and Western Australia and in Perth. Still others can be found around Sydney and associated areas and in Queensland, those on the eastern coasts always on the lookout for signals from New Zealand. Of recent times the northwest coastal areas of Western Australia have been receiving some attention.

The Great Australian Bight

The Great Australian Bight continues to excite amateurs. To most along the southern coastline it presents an almost uninterrupted water path from the east to Albany in the west. Wally VK6WG in Albany has often been the recipient of signals from many operators in VK5 and VK3 on both the VHF and UHF bands. Wally VK6KZ regularly travels from Perth to areas west of Albany in an effort to work across the Bight when conditions are suitable - and he must be the judge of what represents suitable conditions - but he is not often wrong.

A 10 GHz world record

The ultimate glory for such a journey came on 30/12/94 when he and Roger VK5NY completed a two-way contact on 10 GHz, setting a world record distance of 1912.1 km, which so far has not been bettered. It is the lure of such occurrences that keeps certain amateurs touring the country in search of the ultimate remote VHF location.

Other changes I have seen during my 30 years of writing involve the introduction of satellite operation, increased ATV activity, and Packet radio. EME has taken a step forward when stations with relatively unsophisticated installations including one yagi antenna systems, have been able to work across the world via the moon to stations generally with very large antennas. Nevertheless, single yagi to single yagi contacts have been made without resorting to high power. This will continue as more stations join the fun as technology advances and better solid state devices become available to improve receiver noise figures etc.

Joining the EME club

In the mid-1970s I decided that EME was an area that I should investigate. I had a look at the EME installations of the late Ron Wilkinson VK3AKC who was operating on 1296 MHz, then to Dapto NSW where the Illawarra University operated a 30 foot dish on 432 MHz, with Lyle VK2ALU at the helm. Next a look at the installations of Ray VK3ATN and Chris VK5MC, both of whom operated on 144 MHz.

Armed with much information and photographs, I decided to build a 9.75 m (32 foot) parabolic reflector (dish) antenna of all aluminium construction but with a steel central hub for strength and rigidity. With the use of a suitable mesh cover it was designed to work on 432 and 1296 MHz.

Using a special wooden template mounted on the floor of one of my sheds, I constructed 24 x 4.87m (16 feet) trusses with a tolerance of better than 2 mm. Following their completion work commenced on the welded steel central hub assembly.

It was a time consuming task as I was still working as a television technician at the time and all work was done in my "spare" time. It was given a push along when I went to New Zealand in 1980 and met David ZL3AAD who had an operating EME station. I was invited to take the key and was fascinated to clearly hear echoes of my own callsign from the moon.

Now convinced that I was travelling the right path, in between work on the dish I constructed a 1000 watt 432 MHz amplifier in anticipation of an eventual high-power permit. This used the K2RIW circuit. I also constructed a rugged 4.87m (16 feet) high four-legged tower on which to mount the dish, with many cubic metres of concrete around its legs and base to ensure rigidity. It was constructed to allow for an eventual decision whether to use a polar mount or an Az-El mount.

Sadly, all this construction came to an end without completion when I began to notice I had trouble when walking and was diagnosed with a disease of the spine that eventually crippled me. All the parts of the dish were given to Chris VK5MC and Trevor VK5NC in the hope that they would complete the job in my lifetime. I'm still hoping!

The SHF spectrum

It has also been particularly encouraging to see the forward march into the SHF spectrum, with an increasing number of

stations now capable of operating on all bands from 50 MHz to 10 and 24 GHz. Much of this has been assisted by the availability of quality kits and components from overseas designers in countries such as the UK, Germany, Japan and the US. But similar excellent advanced equipment is being produced here in Australia too. I never cease to wonder at the outpouring of ideas and equipment of suitable design from amateurs such as David VK5KK, whose transverter kits for so many SHF bands have encouraged others to move on to these bands.

Of course, hanging over the heads of all operators is the constant threat of continuing requests for use of our bands by vested interests, who see the amateur bands as fair game to be taken for their use and gain. For a long time many of the higher bands have been under populated but this has not always been due to lack of interest. Until recently, a shortage of suitable equipment and components held back the spread of activity to those bands. That situation is now being addressed and we should see the frontiers of activity reaching ever higher in frequency.

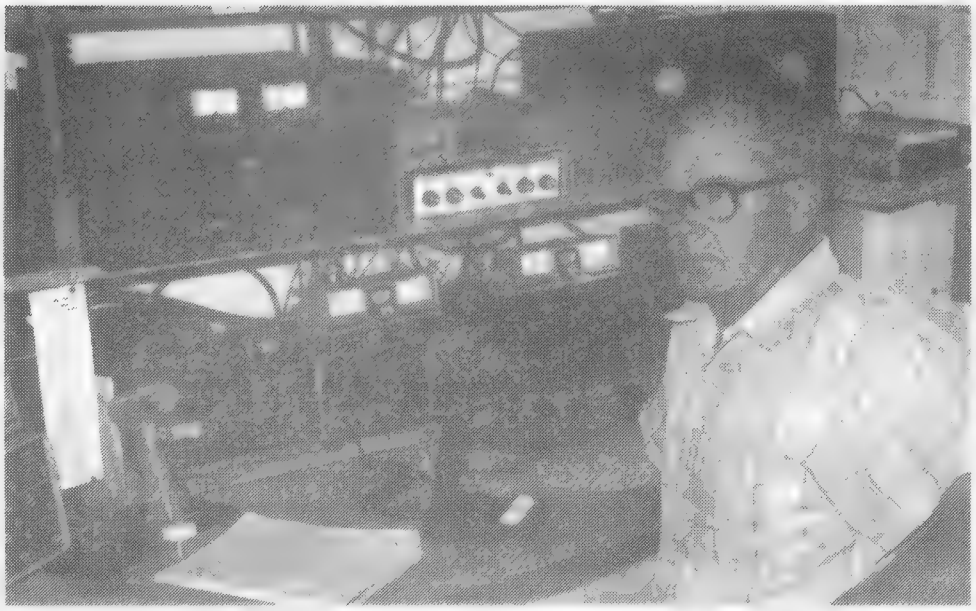

Photo 2 VK5LP in the 1980s shack

The return of 50 MHz

After considerable lobbying in the right quarters, in the mid-1980s Australian amateurs eventually were returned portions of the 50 MHz band. There were restrictions for those operating in Channel 0 television areas, but at least for Cycle 22 we had an opportunity to operate on the low end of the 50 MHz band in an area populated by overseas countries. This was to prove a great boon during Cycle 22, at least if we could hear overseas stations there was every possibility that they would be able to hear us and a contact completed. A number of VKs have worked all continents, with several having the distinction of working seven continents by working Antarctica.

The arrival of computers

With the advent of computers arriving in shacks, amateurs have not only embraced Packet radio, but have moved to the use of e-mails to rapidly disseminate news of openings, and for the posting of various Web pages as sources of information on many aspects of amateur radio. Suddenly the world's amateurs have been brought that much closer. My VHF notes have benefited from the use of e-mails posted on various Reflectors which makes information available to all who subscribe.

The eleven year solar cycles continue to create interest, particularly for six metre operators. As we head towards the peak of Cycle 23, many remember the long distance contacts in which they participated with other countries a full world away. The releasing of 50 MHz to the amateurs of the UK and Europe suddenly produced a flood of countries with keen six metre operators. Soon to make contact with 100 countries became the norm rather than the remote possibility that existed previously. Some European and Japanese amateurs have totals in the 160s or close to it, and there are scores of others filling the spaces in between.

DXCC on 50 MHz

Steve VK3OT is the only VK amateur to achieve 100 countries but several have scores in the 90s. Our remoteness makes it very difficult to readily achieve a high score, but a number of others should pass that total during Cycle 23. The period 1989 to 1992 saw the greatest number of openings to Europe with 7 February 1992 providing well over 500 contacts to VK that was incredible. It will be interesting to see if it can be done again in Cycle 23.

So, in looking back over a period of 38 years as an operator on the VHF bands, it must be said it has been a period of great excitement and change and I am pleased to have been part of that era. Although my name does not appear in any list of record contacts this is of no great concern to me, because in my own way I have extracted the maximum of interest from operating in the exciting VHF portions of the radio spectrum. I have made many friends and learned much from my association with others and the desire to learn all I could about VHF and UHF, by not only operating there but also constructing equipment for such operating.

So the time has come...

My 30 year stint in writing *VHF/UHF - An Expanding World* has given me a great deal of satisfaction. If I have done nothing else, I feel that at the very least I might have left my mark on the VHF bands through setting standards which have been embraced by others eventually for the overall benefit of everyone who turns on a VHF rig, no matter where they may be located. At least I tried! Thank you all, you have been great company.

A final thought for my writings:

I read, I study, I examine, I listen, I reflect, and out of all this I try to form an idea into which I put as much common sense as I can.

73 from The Voice by the Lake.

Eric Jamieson VK5LP

ar

An Upper Sideband Receiver for the 20 metre Band

VK5BGW
Godfrey Williams,
14 Jenolan Crescent,
Hillbank Estate, S.A. 5112

This receiver makes use of the popular NE602 integrated circuit, both for mixer and product detector. Apart from the ladder filter the design relies heavily on material found in "Amateur Radio" and A.R.R.L. publications.

The ladder filter, employing easily available computer crystals, is one that I have used occasionally for upper sideband reception. It works very well, particularly in it's ability to reject the unwanted lower sideband, however on the opposite side of the response, the selectivity skirt is not as steep so later in the circuit an audio filter is included to counter the problem.

The intermediate frequency is 8 MHz so the VFO frequency range will need to be 6 to 6.350 MHz; this allows the use of a frequency counter to display the band ie. ignoring the 6 and mentally substituting 14. To reduce complexity a separate VFO and BFO are not used. With the constructional methods described this works out well, there are no spurious carriers evident.

An IF amplifier (MC1350) allows the inclusion of a useful AGC system. This integrated circuit only needs a change of 2 volts. ie. 5 volts: full gain, 7 volts: no gain, to provide proper AGC action. The AGC circuit features an optional 'S' meter and a switch to select AGC fast, slow, or off.

The final audio amplifier is a departure from the usual LM386 type having less distortion and some audio 'punch'. After breadboarding this project and finalising the design, I completed the documentation and drawings and then built the unit properly using the drawings etc. as if I was a constructor not the author thereby proving a check to ensure accuracy.

Circuit operation (main board).

L1 and L2 with their associated capacitors form a 50 Ω bandpass filter, accepting signals within the twenty-metre band but attenuating signals outside that band. The result is presented to the NE602 mixer via L3 which provides a balanced input, note that the larger secondary winding connects to the mixer because the impedance of the mixer is somewhat higher than 50 Ω.

Capacitors C7, C8, C10 and C11 together with L4 form a Colpitts type oscillator using the internal transistor in the NE602 device, some of the energy produced is directed to buffer T2 via C9 allowing the connection of a frequency counter.

The variable tuning capacitor should be an old broadcast band type, ie. with an offset rotor shaft. The tuning capacitor used in the prototype had semi-circulator rotor plates with the shaft offset from the centre, this producing a near linear frequency spread.

The VFO needs up to 70 pico-farads variation to tune the band so a fixed capacitor in series with the variable tuning capacitor will be required, its value depending on the total capacitance of the tuning capacitor.

C12 and L5 form a narrow band tuned circuit rejecting unwanted mixing products and providing a balanced output for the mixer. The fourth harmonic of the unwanted image ie. 2 MHz should produce a carrier on the lower band edge but it is not audible in this case.

The ladder filter is in the upper sideband mode ie. Capacitor in series and crystals to ground, increasing the value of the

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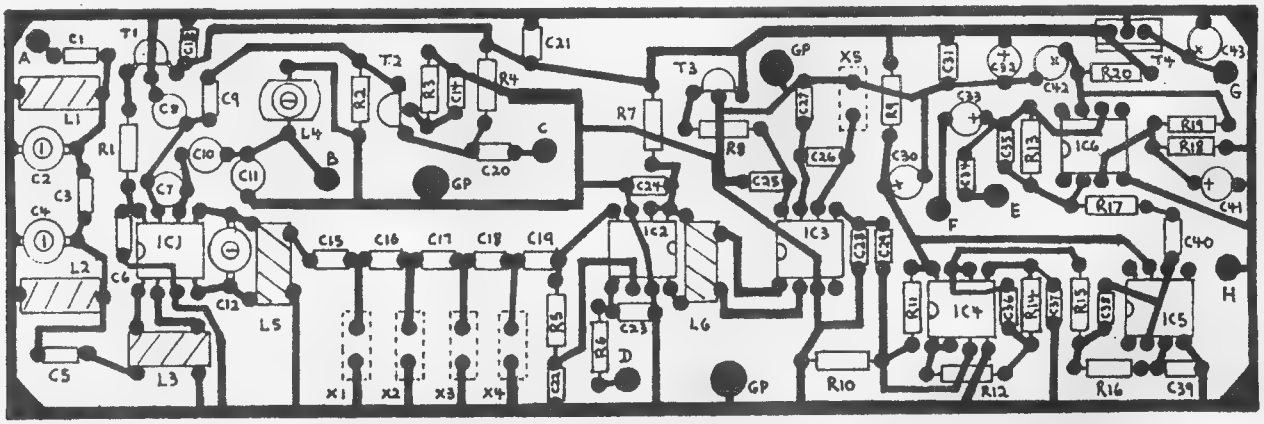

Figure 1: Main Board - actual

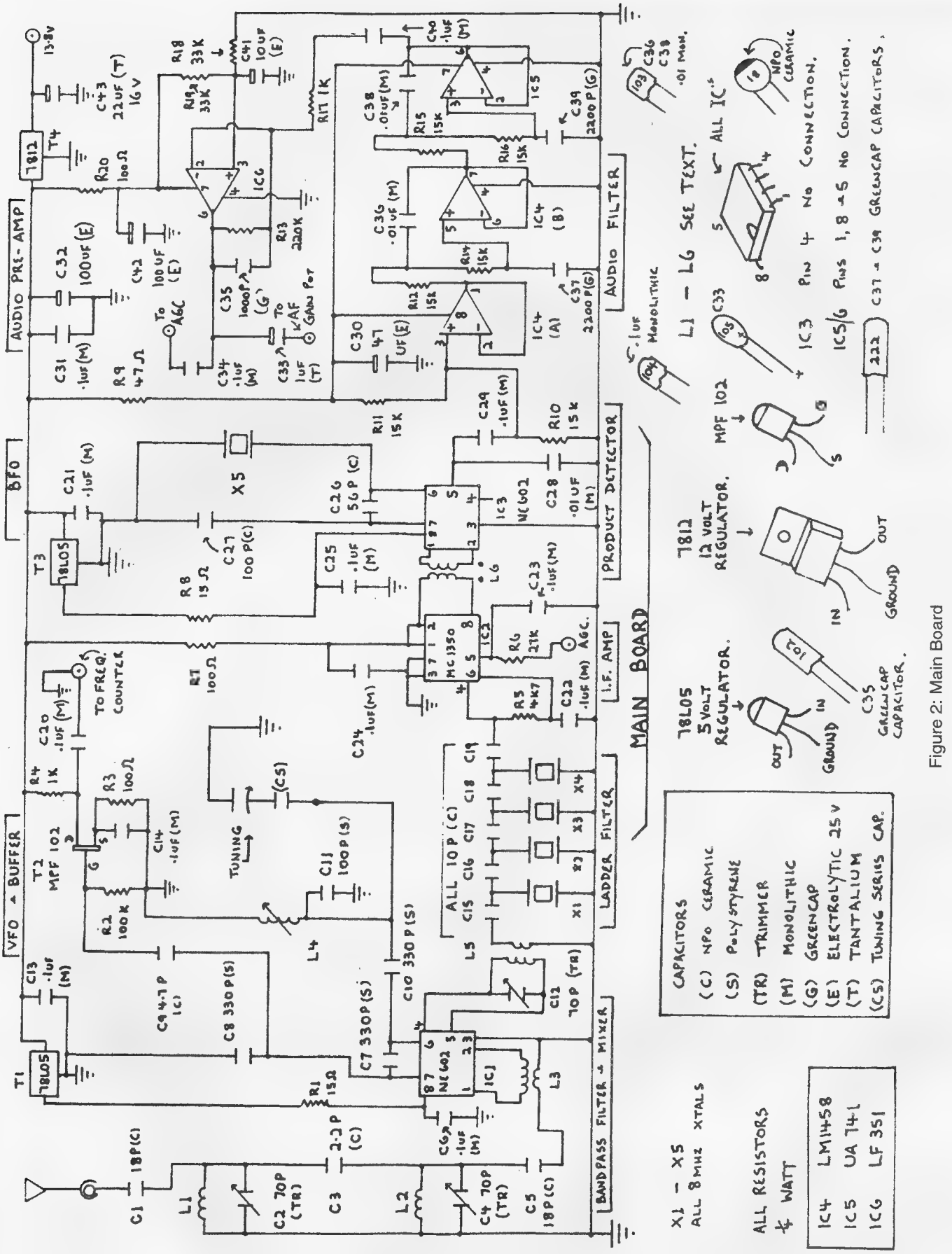

Figure 2: Main Board

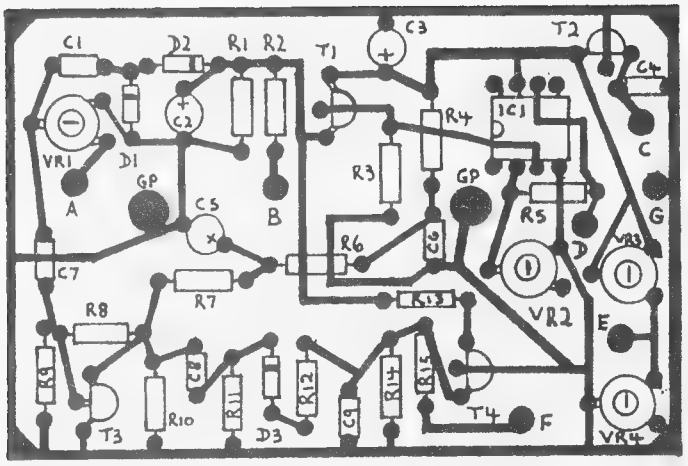

Figure 3: AGC Board

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capacitors widens the bandwidth, decreasing their value narrows the bandwidth. The opposite is the case with ladder filters in the lower sideband mode ie. crystals in series and capacitors to ground.

The following amplifier (MC1350) provides variable gain according to the voltage applied to pin 5 via R6. L6 is a bifilar wound broadbound transformer that provides a handy termination and also a balanced input for the NE602 product detector.

Capacitors C26, C27 and crystal X5 together with the internal transistor of IC3 form a Colpitts oscillator, for upper sideband reception the BFO needs to run at about 7999.5 kHz ie. 500 Hz low this is conveniently the case when X5 is connected from pin 6 to ground. Audio output is taken from pin 5 of IC3, C28 filtering the result, with the following audio filter restricting the bandwidth to compensate for the non-symmetrical response of the ladder filter.

Further audio amplification is provided by IC6 (LF351) the gain is set by the values of R17 and R13 with C35 providing some further audio filtering. Output to the audio gain control is via C33 and output to the AGC board is via C34. Both NE602 devices require a regulated voltage supply for oscillator stability, this is achieved internally. The 5-volt external supply ensures that both devices are not over-stressed.

Circuit operation – AGC board

Audio signal from C34 on the main board is applied to the AGC board via VR1 a 10kΩ trimpot that allows the signal level to be varied for the best AGC action. The signal is then split two ways, via capacitors C1 and C7 connected to the detector and 'hang' sections respectively

Any signal arriving at C1 is detected by D1 and D2, with the result being applied to T1 and IC1. IC1 is a non-inverting op – amp. so that any increase in signal level produces an increase in voltage at pin 6 of IC1. C2 will be charged up and can only discharge slowly through R1, this means that after a signal or noise pulse has ceased the receiver will be without gain for a few seconds as the voltage at pin 6 of IC1 is being held high.

However audio signal present at C7 is amplified by T3 and routed to D3 and T4, C9 becomes negatively charged (note the polarity of D3) which means that T4 will only conduct when there is no signal present. This then provides a means of discharging C2 quickly after the signal or noise pulse has ceased.

C9 plus R14 allows the signal to 'hang' a little, smoothing the AGC action. R15 when grounded by the AGC switch allows a faster action ie. quicker discharge time for C2. When R2 is grounded by the AGC switch it renders the circuit into an 'OFF' state.

A 'hang' circuit is necessary for audio derived AGC systems to avoid annoying characteristics such as pumping and 'clicky' responses. VR2 sets the voltage at pin 6 of IC1 at 5-volts no signal, VR4 provides zero set for the 'S' meter and VR3 provides adjustment for 'S' meters of varying sensitivity. Note that VR3 and VR4 should not be both turned fully anti-clockwise, as this will provide a dead short across the power rail. It was found that a pre-amp. for the detector section was unnecessary there is plenty of audio signal available, swings of up to 8 volts at pin 6 of IC1 were observed when receiving very strong signals.

Circuit operation final audio board

The final audio amplifier has complementary symmetry output transistors and a low noise op-amp. driver. The output level is sufficient for a small speaker and 'armchair' copy. T1 and T2 will run warm to touch. Diode D1 prevents latch-up of the op-amp. driver. R3 should not be reduced in value as it protects the input of the op-amp. driver. If driven hard enough this circuit can deliver up to 3 watts into a 4Ω speaker. In that case T1 and T2 will require heatsinks.

Construction

The printed circuit boards are cut from double-sided copper clad board, one side being used as a groundplane. This side is painted so that it survives the etching process. The trackside of the board is then thoroughly cleaned and allowed to dry.

Referring to the layouts shown, draw the tracks and pads with a direct etch pen, later when the ink is dry the boards are etched in a warm solution of ammonium persulphate. Make sure that the etching process is complete. Any fine whiskers or smears of copper remaining can of course short out the tracks.

Each corner of each board and any pads marked GP need to be drilled through allowing a connection to be made to the groundplane. The five crystals are mounted on the groundplane side of the board so holes will have to be drilled for these, remove the copper around the holes before soldering the crystals in place, their cases are soldered to the groundplane to assist in shielding.

The VFO coil L4 uses a readily available 5-mm plastic former with an internal thread to accommodate the ferrite slug. To secure the former in the board a hole is drilled to allow a snug fit, then a drop of superglue is applied to hold it in place.

To wind L4, solder one end of about 400 mm of 33 SWG enamelled copper wire to the earth pad and beginning at the bottom of the former wind on 26 close wound turns keeping tension all the way. Secure the top turn with a smear of superglue, when dry solder the remaining end to the other pad which connects to C10, C11 and connection point B. The windings are then smeared with a layer of polystyrene cement (plastic model glue) and allowed to dry.

Both L1 and L2 have 19 turns wound on a T50-6 (yellow) toroid core using 27 SWG enamelled copper wire. L5, again using a T50-6 core has a primary winding of 45 turns using 33 SWG enamelled copper wire and a secondary winding of 8 turns 27 SWG wire evenly spread over the primary.

L3 uses a FT 50-43 core having a 23 turn secondary and an 8 turn primary wound in the gap; both windings use 27 SWG enamelled copper wire. L6 also uses a FT 50-43 core and has 13 bifilar turns using 33

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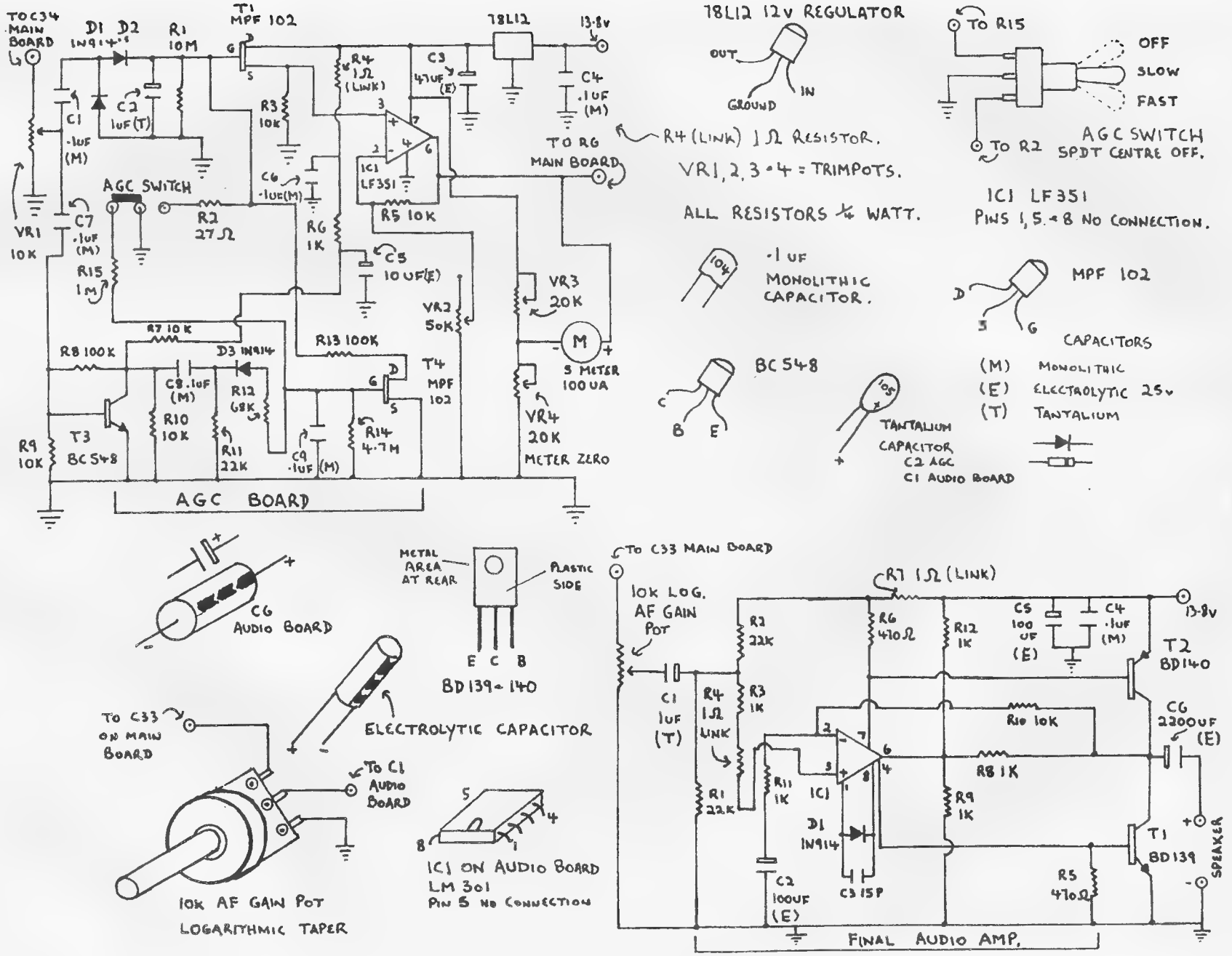

Figure 4: AGC Circuit, AF AMP Circuit

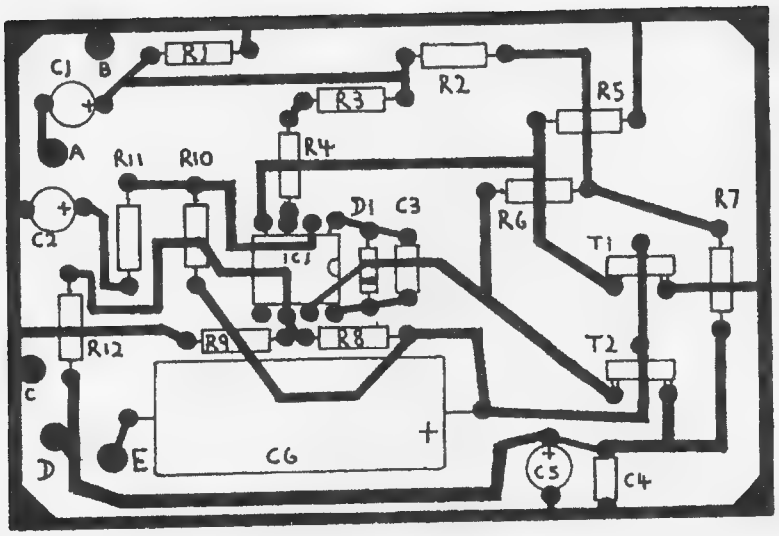

Figure 5: Final Audio Board

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SWG wire, the dots on the circuit diagram indicate the beginning of each winding.

All components apart from the five crystals are soldered onto the trackside of the board, note that each board has its own individual component numbering sequence, also note that on the main board the orientation of IC2 is opposite to the other integrated circuits.

All capacitors are mounted as close as is practical to the board, the resistors can be mounted a little higher to give clearance above the tracks. R7 and R4 on the audio board and R4 on the AGC board are 1Ω resistors used purely as links and can be replaced with wire jumpers if so desired.

T1 and T2 on the final audio board have the metal side of their cases facing toward C5 and C4. The polystyrene capacitors on the main board are secured to one another using a drop of polystyrene glue.

Sockets were not used for the integrated circuits instead 2 mm was trimmed off each lead before soldering to the board.

The prototype was housed in a plastic box with an inner shielding box soldered together using copper clad board, one side of this box making a handy mounting for the vernier drive.

The vernier drive used in the prototype had an outer rotating spindle that allowed the attachment of a circular plate cut from thin aluminium. With an aperture cut in the front panel enabling a view of the aluminium disc and the disc suitably marked we have a frequency indicator. Note that a vernier drive is essential for easy tuning.

To minimise VFO drift the three boards plus all wiring must be firmly fixed in place. A tag strip makes a useful termination point for the capacitor in series with the tuning capacitor, the 13.8-volt supply and a terminal point for pin 6 of IC1 on the AGC board. Shielded 50Ω miniature cable was used for the frequency counter connection being terminated with a BNC socket on the rear panel.

Each board has a number of connection points identified with as alphanumeric letter and are as follow: -

Main board.

A. To antenna.
B. To capacitor in series with the tuning capacitor.
C. To frequency counter.
D. To connection point D on AGC board and 'S' meter positive.
E. To connection point A on the AGC board.
F. To top of panel mount AF gain pot.
G. 13.8 volts positive.
H. 13.8 volts negative and ground.

AGC board

A. To connection point E on main board.
B. To AGC switch.
C. 13.8 positive.
D. To connection point D on mainboard and 'S' meter positive.
E. To 'S' meter negative.
F. To AGC switch.
G. 13.8 volts negative and ground.

Final audio board

A. To wiper of panel mount AF gain pot.
B. 13.8 volts negative and ground.
C. Speaker negative.
D. 13.8 volts positive.
E. Speaker positive.

Commissioning

Check over your work carefully, looking for shorted or broken tracks. In particular, check around the integrated circuit pins for these faults. Check for correct polarity and orientation of the integrated circuits, voltage regulators, transistors, diodes, tantalum and electrolytic capacitors.

Check for correct value of components and also ensure that the wiring of the boards and panel controls is correct and inspect all soldered joints. A little care at this stage could save disappointment and perhaps prevent a project from being banished to the 'doesn't work' bin.

Wind the slug into L4 until it is level with the top of the former, set VR1, VR2, VR3 and VR4 to mid position. Without connecting the antenna connect the rig to a 13.8-volt supply, now turn up the AF gain, if all is well you should be able to hear through the speaker the noise inherent in the receiver.

With the variable tuning capacitor fully meshed adjust the slug in L4 so that the VFO output reads 6 MHz, now with the capacitor fully demeshed the VFO should read 6.350 MHz. If the VFO range is too great reduce the value of the series capacitor. Increase its value if the range is short.

With the tuning capacitor fully meshed again, readjust the slug in L4 for a reading of 6MHz. Check again for the correct range and repeat the above steps if necessary until the correct range is established.

If a frequency counter is not available the VFO carrier can be found using a general coverage receiver or the constructed receiver can be used to detect the carrier from a signal generator.

The slug in L4 should be a firm fit, if the slug has not got a rubber strip bonded to it use a short piece of cotton etc. inserted in the thread.

On the AGC board adjust VR2 so that 5-volts is present at pin 6 of the IC1, now adjust VR4 to zero the 'S' meter. With the AGC switch in the off position ie. R2 on the AGC board is grounded, connect an antenna and select the middle of the VFO range. Adjust C2, C4 and C12 for maximum band noise, go over these adjustments a few times until there is a distinct difference heard between antenna connected and antenna disconnected. On a quiet day the receiver noise floor will be just below the band noise.

VR2 on the AGC board is varied to suit 'S' meters of different sensitivity. With a strong signal present, check the voltage swing at pin 6 of IC1, a 59 signal will show a swing to 6 volts.

Trying to use a meter with low sensitivity will load down IC1 and spoil the AGC action. If VR2 is readjusted the meter zero will have to be reset. VR1 on the AGC board is adjusted on receiving a very strong signal, when the signal ceases to distort the output VR1 is adjusted correctly.

Most of the parts used in this receiver were available from W.I.A. equipment supplies here in VK5. The vernier drive, the former and slug for L4 were purchased from D.S.E. the part numbers being P7170, R5020 and R5025. The only component that may prove difficult to obtain is the MC1350; if the constructor has tried the usual outlets without success, one I.R.C. sent to my address will guarantee the swift return of one of these devices.

The ammonium persulphate etchant and direct etch pen are both available from D.S.E. the part numbers being N5654 and N5181. For best performance, the crystals used for the ladder filter should resonate within 20 Hz of one another.

Performance

With 'lids' on and after a warm up period VFO drift is manageable for a receiver. There were no jumps in frequency, just a slow drift up or down. One can only expect so much from such a set-up.

Note that the capacitors designated as polystyrene should not be substituted, besides being very stable they have a slight negative co-efficient which helps to counteract the positive co-efficient of L4. The polystyrene capacitors used in this rig were obtained from D.S.E. Soon I expect to commence work on an accompanying exciter for this receiver in which case a separate stable VFO will be a necessity.

To assess the performance of this rig I sat it alongside my FT840 using an antenna switch to make comparisons between signals of varying strength. One would expect the FT840 to be better, and it was, but not by a lot. Properly built and adjusted, this little rig gives a good account of itself. I was particularly pleased with the AGC action, although being audio driven, it reacted smoothly in all situations with the ability to prevent overload from extremely strong signals.

There is scope enough for changing the value of some components to suit the individual constructor, eg. I prefer a crisp but not tinny audio response that may not suit some amateurs so C35 on the main board can be increased in value.

The six 15k resistors concerned with the audio filter can be altered, decreasing their value will widen the bandwidth, increasing their value will narrow the bandwidth.

For an improved response more crystals and capacitors can be added to the ladder filter at the expense of IF gain. As mentioned before, the four crystals should be as close as possible to each other frequency wise, also X5 can be checked to see if it is resonating somewhere in the region of 300 to 600 Hz low.

The string of capacitors in the ladder filter can be changed in small increments eg. 8.2pF for a narrower response, 12pF for a wider response. Ladder filters in the lower side band mode can be used for upper side band reception. However, I have tried it in the past, but was always disappointed with the response.

If the constructor has a commercial 9 MHz sideband filter and a suitable crystal for the BFO these can be used. The VFO frequency will the need to be 5 to 5.350 MHz which is easily managed by adjusting the slug in L4. C12/L5 can easily accommodate the 1 MHz change.

Parts list main board

Resistors 1/4 watt

R1, R8	15Ω.
R2	100kΩ.
R3, R7, R20	100Ω.
R4, R17	1kΩ.
R5	4.7kΩ.
R6	27kΩ.
R9	47Ω.
R10, R11, R12, R14, R15, And R16	15kΩ.
R13	220kΩ.
R18, R19	33kΩ.

Capacitors

CS NPO ceramic to suit tuning capacitor (see text).
C1, C5 18pF NPO ceramic.
C3 2.2pF NPO ceramic.
C2, C4, C12 70pF trimmer.
C7, C8, C10 330pF polystyrene.
C11 100pF polystyrene.
C9 4. 7pF NPO ceramic.
C6, C13, C14, C20, C21, 0.1µF monolithic.
C22, C23, C24, C25, C29, C31, C34 and C40
C15, C16, C17, C18, C19 10pF ceramic.
C26 56pF NPO ceramic.
C27 100pF NPO ceramic.
C28, C36, C38 0.01µF monolithic.
C30 47µF 25-volt electrolytic.
C32, C42 100µF 25-volt electrolytic.
C33 1µF tantalium.
C35 1000pF greencap.
C37, C39 2200pF greencap.
C41 10µF 25-volt electrolytic.
C43 22µF tantalium 16-volt.

Semi-conductors

T1, T3 78L05 5-volt regulator.
T2 MPF102 FET.
T4 7812 12-volt regulator.
IC1, IC3 NE602AN integrated circuit.
IC2 MC1350 integrated circuit.
IC4 LM1458 dual op-amp.
IC5 UA741 single op-amp.
IC6 LF351 single op-amp.

Inductors – SEE TEXT

Crystals

X1 to X5 all 8 MHz computer crystals.

Parts list AGC board

Resistors 1/4 watt

R1	10MΩ.
R2	27Ω.
R3, R5, R7, R9, R10	10kΩ.
R6	1kΩ.
R4	1Ω(link).
R8, R13	100kΩ.
R11	22kΩ.
R12	68kΩ.
R14	4.7MΩ.
R15	1MΩ.
VR1	10kΩ.
VR2	50kΩ.
VR3, VR4	20kΩ.

Capacitors

C1, C4, C6, C7, C8, C9 0.1µF monolithic.
C2 1µF tantalium.
C3 47µF 25-volt electrolytic.
C5 10µF 25-volt electrolytic.

Semiconductors

D1, D2, D3 IN914 diode.
T1, T4 MPF102 FET.
T2 78L12 voltage regulator.
T3 BC548 transistor.
IC1 LF351 single op-amp.

continued next page

continued from previous page

Parts list final audio board

Resistors 1/4 watt

R1, R2	22KΩ.
R3, R8, R9, R11, R12	1kΩ.
R4	1Ω(link).
R5, R6	470Ω.
R7	1Ω(link).
R10	10KΩ.

Capacitors

C1	1µF tantalium.
C2	100µF 25-volt electrolytic.
C3	15pF NPO ceramic.
C4	0.1µF monolithic.
C5	100µF 25-volt electrolytic.
C6	2200µF 16-volt electrolytic.

Semiconductors

D1	IN914 diode.
T1	BD139 transistor.
T2	BD140 transistor.
IC1	LM301 low noise op-amp.

Hardware and Miscellaneous

'S' meter.
Speaker.
AF panel mount pot.10kΩ log.
AGC switch SPDT centre off.
On/off switch.
Tag strip.
Variable capacitor (see text).
Copper clad board.
Antenna PL259 connector.
BNC connector for frequency counter.
Aluminium disc for dial readout.
Power connectors.
50W miniature cable
Hook-up wire
Cable ties
Etching pen and etchant (see text)

ar

Scraping the bottom of the Technical barrel

The Editor has received a few comments on the 2000 AR. The greater number of Technical articles has been appreciated. However this has emptied the technical article bucket. Please consider submitting an article on something you have made, or an analysis of a circuit or aerial or ? Articles can be anything from half a page to 4 or more. The magazine is a forum for sharing our experiences and for trying out new ideas on each other. I look forward to hearing from you.

Contact The Editor AR by packet VK5UE@ VK5LZ.#ADL.#SA.AUS.OC
or e-mail edarmag@chariot.net.au or at 08 82552138

A Trap for an old Player

For years a Realistic DX400 receiver has accompanied me when I have gone bush. Although more than 10 years old now, it is quite a hot receiver, and has been used on the broadcast and short wave bands to keep in touch with news broadcasts, footy results and the like. It has keypad frequency entry, and a few memories in which to store favourite stations. It is fairly large by current standards, but this means that the pushbuttons are big enough to be seen, it has a reasonable speaker and thus acceptable sound quality, and there is room for two decent batteries - a 7.2 volt stack of C cell nicads, and a pair of AA size dry cells for memory maintenance. The nicads are easily charged from a nominal 12 volt supply through a 27 ohm resistor, and keep the radio going for many hours after a charge.

A few weeks prior to another excursion, I decided to recharge the nicads. The radio was going at the time, and in what was not one of my cleverer acts, I connected the battery across the 12 volt supply minus the 27 ohm resistor. There was a really rude noise from the speaker which motivated me to disconnect the 12 volts extremely quickly, but I was still too slow - the DX400 had expired. A few of the pixels remained energised on the display, but none of the pushbuttons or controls did anything.

I had a circuit diagram in the back of the owner's handbook, (that shows you how old this set is!) and using this poked around inside the set with a DVM looking for anything which might have been damaged by the overvoltage. Nothing found, and I managed to convince myself that the fault lay on the most expensive component in the set - the CPU. I decided to take the set back to the supplier for a post warranty repair, having first found out that the CPU was still available and that the total cost of the job was economically justifiable. The supplier agreed to complete the repair prior to my departure, but as it happened it wasn't, so I got the set back, as dead as ever.

So the trip was completed without the DX400 and during this time I wondered whether I could make use of any of the bits in the thing before consigning it to the tip.

Home again, and I once more tried the DX400. The same few pixels lit, and just as before none of the controls did anything. Whether it was divine inspiration, or my reward for clean living I do not know, but it occurred to me that the CPU memory might have been corrupted by the overvoltage. This was soon checked by removing the backup batteries for a day before putting them back. And that was it. The trusty Realistic came good and seems totally unharmed by the experience.

What a relief!

73 de Ian Cowan, VKI BG.

Gippsland Technical Conference

As an attendee, along with my wife, to the second annual Gippsland Technical Conference held at Churchill on the weekend of July 10 and 11, we would both like to thank Peter Freeman and the other zone members and wives who were involved in the organisation of the weekend.

The technical programs were excellent; both in subject matter and the professional way in which they were presented.

Like wise the wives/partners of the participants were catered for with visits to the many excellent craft venues, gardens, vineyards and gourmet foods which abound in the region.

Saturday evening at the conference dinner was another success with the opportunity for everyone to socialise in preperation for the microwave demonstrations on Saturday morning while the great BBQ lunch finished off the day and the conference.

I hope next year will see many more attend because they wont be disappointed.

David Waring VK3ANP
RMB 1300
Banksdale Road
Hansonville 3675

Conquer the BW* and get your CW!

(*The **B**ludger **W**ithin)

Translated, with comments relating to Australian circumstances, by Mike Krochmal, VK3KRO from an article by Dieter Engels, DJ6TE in CQDL 8/99 (pp. 659 & 660) and 9/99 (pp. 743 & 744)

Part I

Do you really want to learn CW ? And you're asking me whether you'll ever manage it, with all those Morse code characters ? But of course you will - after all, millions of radio amateurs before you have managed it.

Why should you, of all people, not be able to do it ? Something which those nice people who attend the local ham radio club have been able to do should not present a major problem to you. Or should it ? Piece of cake !

Good prerequisites ?

Excuse me ? In your case, the prerequisites are particularly favourable ? Great, I'm really pleased for you ! Unbelievable : you've done your VCE ? And you studied Electronic Technology - successfully, even. And you are so musical that you can simultaneously play piano with one hand and violin with the other. And you're financially well off, too ! Forget it : none of that will help you ! Not in the study of CW - that calls for other attributes. Three of these come to mind immediately : 1. Endurance ! 2. Lots of endurance ! 3. Enormous amounts of endurance ! But don't kid yourself : endurance is a pretty rare commodity.

The "Bludger Within"

You might be familiar with him/her, the little but determined "BW" ? Make no mistake : you, too, have a resident BW. It is he/she who talks with a quiet but insistent voice : "Just for one day, leave that stupid diddly-dah be - there's a great show on the telly". It is also he/she who, much to the amusement of your CW tutor, earnestly insists that you are currently under great stress and therefore have no time to practise. And make no mistake about this, either : your BW knows you really well, and knows all about your weaknesses. To combat him/her is the greatest problem in learning the Morse Code !

continued next page

Frustrated ?

Have you changed your mind now ? Have I frustrated you ? I'm sorry, that was definitely not my intention. But at this point, you can still decide whether you really want to learn CW or whether you would rather do your "Little League License" and just "wait out" the CW exam, because the days of our suffering are probably numbered. Let's consider together the best means for you to learn CW. First, I will introduce you to the various methods which can be used to teach oneself, or be taught, CW. Each of them has pros and cons.

Intensive CW

Let's start with the surest and quickest method of learning CW :

• The intensive courses

These courses (which are advertised in CQDL) prepare candidates for the exam by means of whole-day instruction sessions. The subjects of study are the technology, operating techniques, regulations and sometimes even CW. The courses generally extend over three weeks and are run by highly motivated radio amateurs. Morale is always first class, and the success rate of such courses is better than that of any other type of learning. However, as concerns CW, there is unfortunately one catch : a prerequisite for entering one of these intensive courses is a knowledge of Morse Code characters at 6 wpm - otherwise they will not accept you for the "big" certificate. You will just have to do some learning for yourself first - but then a whole lot more afterwards.

• Morse code course at the local ham radio club

This is probably the most common method of learning CW. Often, Morse code courses are offered in stages. Stage 1 : learning of the Morse code characters up to 6 wpm and Stage 2 : acceleration of speed up to 12 wpm, ie up to exam level. The costs of such local ham radio club courses are usually quite reasonable, but they are higher if the course is being held at a local public secondary school. The success rate is "so-so". For example, I am happy if after 30 to 40 practice nights there are still five to ten hardy survivors left, out of the 30 keen aspirants who attend the first evening. Oh well, it's probably my fault. The reason for this slack result is obvious : the course evenings are usually at the end of a working day. The course participants have usually pretty well had it, are only minimally motivated, and are difficult to enthuse. Furthermore, the deadlines are set in concrete - get side-tracked with another project, or even a 3-week holiday, and things get really tight for time. And most importantly, because now the "BW" rears his/her ugly head again : additional practice at home is a real must.

• DARC on-air Morse code course

This third option is probably doomed to failure unless supported by some other means of assistance - additional practice with supplementary texts and/or sympathy from an OM or YL. Reason : the 24 lessons are insufficient, even just from the point of view of the available time. An additional means of practice is essential ! My recommendation : ask around in the local ham radio club whether recordings of this course are available. The individual lessons have been put together well, are interesting and professional, and contain a lot of valuable material relating to operating techniques.

Well, that covers those options for learning the Morse code which operate within a fixed time-frame and thus firmly set the speed of learning. But the expectation that you can just sit back and listen "in comfort" to what is happening "in front, there" is a false one. That is not enough. Not in a month of Sundays ! You will need to make use of your own initiative, and if you are unable to make such a commitment, then you might as well just settle down in front of your computer, instead, right now !

The computer knows CW

So now I will bring to your attention some other options which will allow you to learn CW all by yourself, using your own individual time schedule. But I will also not spare you the disadvantages of the isolated learning process :

1. it is easier to learn in a group ! To see that your neighbour has the same problems as you do is immensely uplifting.
2. You will miss out on the benefit of an experienced Morse code teacher. Especially when you are stuck or becoming intensely suicidal because, for example, you have been confusing Q and Y for weeks. The Morse code teacher could console you and/or pass on a few tips - after all, that is his/her main function !
3. You'd be amazed at the number of times that really interesting programs are being screened on TV at just that same time that you picked to do one of your rare practice sessions ! Don't shake your head ...

• Audio cassette courses (DL1FL)

Three cassettes (38.- DM) - they are not enough by far. Each cassette or CD plays for a good hour, but no more. But just to learn the Morse characters, you are bound to need more than 20 hours. And to properly learn to hear 12 wpm, you will need as much again. To learn through recording media is really very difficult. But it is also no longer sensible, since there are now better ways.

• Computer courses

Their number is legion. I've checked out many - they all fulfill their purpose ! The few bucks which you'll need to spend are thus of no great consequence. Allow me to briefly review just two of these, representative of all the others. They are both free, have been programmed with great experience and effort, can be run from Windows, and are very easy to use. The latest versions of both of these are probably being circulated in the local Ham Radio Club, or on the Internet, or can be obtained from the authors in return for a recognition fee (and kind words !). (Hopefully, they won't lynch me for this, Hi). The programs allow many settings, and they allow the learning of CW in the optimally shortest time, without other auxiliary aids. I found a remark in one of the programs quite comforting, that CW is no harder to learn than touch-typing ("typewriter 10-fingers blind"). There are times when even I believe that there is much too much fuss about the learning of telegraphy to 12 wpm. But now to talk about the two programs, in brief :

- **CW 2.7** by Heinz Peter Niksch, DL4FCH, Sallburgstr. 4, 60385 Frankfurt. Very nicely put together. One can create one's own tapes, because random text can be printed out and allows later checking.
- **CWT 16.7** by Heiner Hanenkamp, DK5LI, Schulstr. 7, 25421 Pinneberg. Visually even prettier than the previous one. Valuable learning hints. Just great !

Thank you, friends - you have really worked hard. Also good are HF-Morse by DL3SDL or EGA-Morse by DL5AAC. They represent the many other Morse programs which I am either not familiar with, have forgotten, or have not been able to find in my mess-heap. So these were programs for PCs - but there are also programs for Apple computers. They are somewhat harder to find, and always in English. (Or does someone know a German one ?). I would like to mention just one example :

- **MorseMaster :** The user interface is typical Apple : beautiful. But the adjustment possibilities aren't up to CW 2.7 or CWT 16.7. One thing is common to all programs : They are definitely not as entertaining as "The Box". What I mean to say is that the "BW" can have a whale of a time. The programs only offer the prerequisites for learning - you yourself must also really want to learn. And do not underestimate your own inertia : even starting up a program can become an "insurmountable hurdle" - if you don't really want to practise.

Pocket Tweeter

Microprocessor-controlled units from Switzerland, which are capable of generating CW signals, have been around for some time. Such an instrument in effect replaces a computer as well as its program. These gadgets have the (only) advantage, compared to a computer, that they are always ready for action. But they are not cheap - you will need to spend around 400 DM to 500 DM. Since two years ago, a small Morse tutor which is good value for money has been available from MFJ in the US : the MFJ-418. It costs barely 200 DM, and is the size of a packet of cigarettes. An LCD readout simplifies the learning of Morse characters tremendously, because it displays the characters as they are generated. We at the local Ham Radio Club in Ulm, P14, loan these tutors (which are owned by the club !) to those of our members who are keen to learn the code, for a period of up to one year.

Why not have a word with your local Ham Radio Club ? So, those are the various possibilities for learning CW. My recommendation : if a Morse code course is being offered in your vicinity, go for it ! It the timing is not right, or if the venue is too far away (consider the roads in winter, too), then learn using a computer or the MFJ-418.

But, just to say it again : success is determined not by the method or the equipment, but solely and completely by your endurance in your practice.

E-I-S-H-T-M-O or E-L-V-0 ?

During the first lesson, is it best to learn the letters E-I-S-H-T-M-O or E-L-V-0 ? Two different philosophies of learning hide behind this decision. Unfortunately, the opinions of the "experts" diverge somewhat on this point.

- **The first system** (E-I-S-H-T-M-O) has as its objective the most rapid possible learning of the characters - no matter how - in order to then accelerate to the required speed. The entire set of characters (26 alphabetic letters, 10 numeric digits and a few punctuation and operating characters) is learned in only seven lessons. All ten numbers are learned in the last lesson. The characters which are easiest to learn, namely E-I-S-H-T, are contained in the first lesson, because they are hardest to pick up later (because they 1. have no "sound" and 2. are very short). This system was used by the German Federal Navy; the (American) MFJ-418 Tutor works in the same way.
- **The second system** (First lesson : E-L-V-0, then A-S-Q) aims to prevent the confusion of characters by distributing these characters in lessons which are widely spaced in time. All of the characters are distributed among a total of 19 lessons. But in practical terms, this means that you will hear the characters for lesson 19 (8 and ?) for the first time at a time when, in the first system, you have already been practising all (!) characters together for twelve evenings. Surely that is a disadvantage. And the supposed advantage is, at best, questionable : that certain characters will not be able to be confused with each other because one of them will have been well and truly learned before the other one is introduced. I have taught in accordance with this system for about 20 years, and at times observed quite the opposite effect. Quite typical : confusion of C with K. The C is often not heard in its entirety, but prematurely and clearly recognised as a K after the dah-dit-dah. So then there are later problems with the K. This recognition of characters without absorbing the entire dit and dah sequence is quite typical and normal, by the way : thus a 9 (dah-dah-dah-dah-dit) is recognised only by its tail (dah-dit). The logical abbreviation for a 9 in contests is thus an N.

Furthermore ...

One can learn the Morse characters using either system - but I prefer E-I-S-H-T-M-O. And now I should really give you a few clues about the actual learning process, because these are very important for an understanding of the problems, which are guaranteed to rear their ugly heads. Unfortunately, teh available space is insufficient, so I will report more about these issues in a follow-on article. But that should not prevent you from starting with your practice immediately.

Or, do I hear a murmur — from your "BW" ?

...to be continued

Part II next issue

So you have seriously decided to learn CW? I'm really pleased, because I personally consider telegraphy to be a fascinating operating mode.

WICEN (Vic) Y2K

John Kerr VK3BAF.
State Secretary, WICEN (Vic) Inc,
40 Gwent Street
SPRINGVALE SOUTH Vic 3172.

An extract from a memo to the Secretary WICEN (Vic.) from M.N. (Neil) Comrie, Chief Commissioner Victorian Police

I am writing to express my appreciation for the significant contribution made by WICEN Vic. volunteers in the installation and staffing of a back-up state-wide radio network for emergency response coordination purposes.

The year 2000 and the associated "Millennium Bug" posed significant risks to the community and the State's infrastructure, particularly the essential services. If some predictions of widespread failures to electricity and telecommunications networks had been realised, the community would have been exposed to significant risks.

I am advised that WICEN members devoted a great deal of their time to designing communications corridors, installations of antennae, repeaters and cabling at various coordination centres.

The dedication of volunteers who contribute their time and skills to promoting community safety often heartens me. WICEN volunteers diligence in testing the network and their preparedness to operate it over the year 2000 transition period is exemplary.

Peter Carter VK3AUO operating from his Mobile station

This is how these comments were earned.

Firstly we must go back to late 1998 when the concept for a communications system was instigated by the Vic. Police in conjunction with WICEN. Basically the system was to provide a State wide communications network to all the new Police District and Divisional headquarters as designated in the new regional planning being implemented by Victoria Police, to be effective by November 1999. In essence this did not appear to be an insurmountable problem to the seasoned WICEN man but in practice the specifications and the vast area of the planned network, provided instant headaches, indicating the need to form some expert teams to lead our planning.

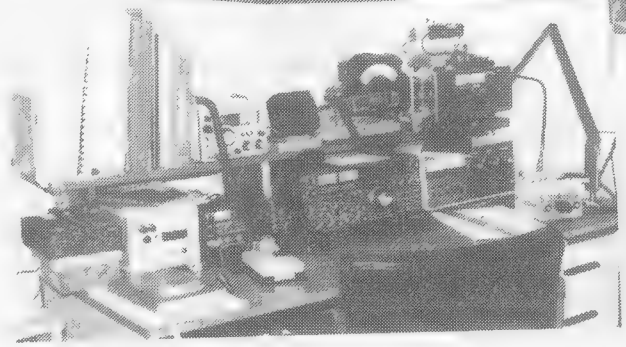
The system called for the installation of a State wide VHF network to provide primary communications, plus a fall back system, and a HF system to cope with those areas not capable of reliable VHF communications. The base station operations and operation centre were to be at the Victoria Police Headquarters at the World Trade Centre in Melbourne. To assist the project, WICEN was given a financial grant to upgrade nominated repeaters and antenna installations to cope with the system and the new Police Regional Communication Centres. All monies spent were subject to Department of Justice audit and certain items remain the property of the Department.

To handle this concept a Technical group was formed to carry out a State wide survey of optimum repeater coverage together with path loss figures so a VHF system could be used together with a HF system where the VHF could not cope with the distances to some of the furthest regions. Working from the results of the survey, various antennae and radios were installed at Police H/Q, and these were then remote controlled from a control point within the Police complex, which was to be called SERCC, (State Emergency Response Communications Centre). Furthermore the WICEN group had to provide the generators and back up power supplies for all this equipment in case of a mains failure

The regions of course had to cope with manning the District Police Stations as they would a normal field exercise, that is each District under the guidance of the Region Coordinator provided the necessary radios, masts, antennas, with some assistance from the technical group in providing stand-by batteries, in case of sustained operation under battery power. Of course these operators did not in all cases have the most comfortable operating conditions, but all in all things were not too bad.

Mobile station of John Kerr VK3BAF

Members of WICEN (Vic) at a planning meeting



Home Station set up of John Kerr VK3BAF

Finally came the WICEN Administration Station which was located at the Moorabbin Radio Club rooms, which was ideal for this exercise as VHF and HF aerials were already in place. The main function of the Administration Station was to provide a WICEN control centre which would cope with staffing of field stations in the event of sustained operations etc. and also to handle any administrative problems which may have occurred.

However, this part of the exercise did not come under any great trial because as we all now know there was no real extending of our resources due to the "no fuss" passing of the Y2K Bug! It would have been interesting, and helpful too for future similar occasions if we had been able to test and prove this part of the system as well.

In conclusion some idea of the undertaking can be gauged by the spread of the operations. Some 18 District Police stations were manned, from Mildura to Bairnsdale, from Warrnambool to Wangaratta, plus Police H/Q., and our own Administration Station. All in all over 80 operators were used on the night of 31/12/1999 and the early hours of the next morning. There were another 50 operators on stand-by for subsequent shifts if required. On the morning of New Year's Day the system was fired up again at 0000 hours Zulu to cover the lag in GMT time, but this time only the country districts were manned, together with our control station and the Administration station. For those of you who heard us on air, you must agree the system worked very well, and WICEN thanks you for your cooperation in keeping the frequencies clear.

It would have been nice to try out our Administration capabilities, but this would have meant we would have had to have a major breakdown somewhere. Undoubtedly it was better the way it was with no major hiccups. This was WICEN's big chance to demonstrate its expertise and there is no doubt it was done very well. Congratulations to all those involved. We now have an efficient State wide system which can be readily activated in the event of a major disaster.

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The G5RV – A Portable Antenna Option

Ian Cowan, VK1BG.

For years now my wife and I have been in the habit of disappearing from our home QTH so as to go bush. I usually take portable HF gear with me, both as a means of keeping in touch with the family at home, and as a pastime activity when in camp somewhere. An essential component of my radio gear is a flimsy G5RV antenna.

The aerial is nothing special. It is just a bit of single strand hookup wire of the right length (102 feet) with some 300 ohm TV feeder at the centre, also of the right length (29 feet). The whole thing probably took about 30 minutes to make, and that was about 15 years ago, so it doesn't owe me much. When not in use it is wound on a spool made from a jam tin. When deployed for action, the trusty G5RV couples to the rig via a balun into a coax through the caravan wall, and then an ATU. It has proved to be an effective antenna on 80, 40 30 and 20 metres, and it loads well on the rest.

Getting the antenna up is ideally achieved by throwing strong fishing lines weighted with reasonably big sinkers either over the top of, or through, a pair of tallish trees which happen to be about 120 feet apart, with the caravan placed at centre span. The sinkers are then removed, and the antenna is pulled up using the nylon lines as both supporting medium, and as the insulators. When erected, the antenna is usually hard to see, though the black feeder silhouetted against the sky sometimes gives the game away.

The ideal installation is seldom achieved, because campsites seem to have as many variations from perfect as there are words on this page. In addition, most campsites are owned by somebody either directly, or by someone who has the privilege of temporary occupancy of a site near yours. So compromises in the physical configuration of the antenna are necessary to avoid material or personal conflicts, and these compromises usually involve putting one or more bends in the G5RV, and the use of more than two supports. The G5RV seems to be very tolerant of bends, though I make a point of keeping the ends as clear of nearby objects as possible to avoid dielectric losses and detuning.

Once I decide how to string the G5RV up at a site, there is usually not much trouble getting it there, though it took a bit of practice before I could throw the sinker reasonably close to where I wanted it to go. I have not hit anyone or damaged any property, and with only one exception the sinker has always made it safely back to ground with the nylon line faithfully following it. The exception was in suburban Perth, where it became tangled high up in a tall beech tree. I could not break the line by hand so I hitched it to the towbar of my car to do the job. This was pretty scary, because I was aware that had the sinker broken free, line tension could have propelled it towards the car like a bullet. Anyway the line broke first and so far as I know, the sinker is still dangling from that tree. Calamity was narrowly avoided on another occasion at Wilpena Pound when a young lad climbed a bulloak tree for me to effect the rescue of a sinker. He was a brilliant tree climber, and would have made a marvellous tree surgeon.

With the antenna safely erected, I usually leave the free ends of the nylon lines wound on to spools which are tucked away out of sight either in the trees concerned, or buried.

I used to try to be a bit sneaky about putting up the G5RV, so I usually did this at a time when there were not too many people about. This was to avoid having to deal with the curiosity of those around, and to avoid the risk of being told I couldn't do it by someone in authority. This policy was mostly successful, though not always. Once when throwing a sinker in the Bowling Green National Park in Queensland I was sprung by a ranger who told me that "You can't go fishing here, mate!". I would have thought that to be a bit obvious, as the nearest water was several kilometres away. And occasionally my spools of nylon line have been discovered and stolen. One such occasion was during a visit to Lake Argyle in WA. It was sked time, and just as I was tuning up, the G5RV collapsed across the roof of the caravan. I flew outside in time to catch a pair of elderly gents congratulating themselves about a handy find, but they soon departed empty handed and with fleas in their ears. In retrospect I think these gents were relatively innocent characters who did not deserve the serve I gave them, but there have been a few other cases of petty theft by people who did not need to resort to it.

So my policy now is one of openness. I usually tell campground managers of my intentions, and tell anyone near my precious spools of line what they are attached to, and in so doing engender some level of protective instinct in those people. The downside of this policy is the need to spend time explaining what amateur radio is about, but time is not usually critical, and it is good PR for the hobby. Another effect is that it tends to flush out the odd broken radio or TV set, but I am getting good at explaining that I have no expertise in these areas. Worthy cases excepted, of course

Camping ground managers are almost always helpful, sometimes guiding us into their best treed sites. It is rare for one to raise the safety issue, and none has ever raised the possibility that I may cause TVI or whatever. Clearly they have had few bad experiences with radio amateurs, and I try to keep it that way.

The responses from other campers are much more varied. Most have little understanding of what amateur radio is, and the separate nature of it as compared with CB. Many, upon first spotting the G5RV apparently tethered high up in the trees want to know "how did you get that thing up there!", and there is a temptation to have a bit of fun at their expense, but I usually resist that. The G5RV is often thought to be some sort of TV antenna, as the feeder is familiar to many. Some people show a genuine interest in what is going on, and every now and again a real amateur will appear out of nowhere for an eyeball QSO. Openness is much the better policy.

With my old G5RV and a nominal 100 watts from a battery operated rig I have been able to keep in touch with home quite reliably, notwithstanding some pretty poor QTH's sometimes. I have found that at least for intra VK contacts, the nature of the QTH, and the configuration of the G5RV are not good predictors of results. My most ideal installation of the G5RV was in the bed of the De Grey River in WA. The antenna was over sixty feet up tied to a pair of tall and well placed river redgums. I expected great results but there was total and very rare failure that night! Yet at the Cape Le Grande National Park, also in WA, there are no trees so the poor G5RV was laid across the scrub so low that a passing 4WD vehicle nearly wiped it out. Here we had excellent results, and no one was more surprised than me! Good performance on 20 metre DX can be more easily predicted. Elevated sites, and those near water are best, and the G5RV has carried me into many a remote country from such locations.

The G5RV can be used as a TV antenna at a pinch, and gives a very worthwhile boost to a broadcast band receiver when the campsite is really remote.

I see and hear of lots of portable stations using whips and random wires for their HF aerials. These often work quite well, but not well enough to encourage me to toss out the G5RV. It is not as convenient as a loaded whip to use, but I would certainly commend the use of a light weight G5RV to those amateurs who like me have joined the "grey nomads" on Australian roads.

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Cover story

New Australian 24 GHz Distance Record

David Minchin, VK5KK

In the past month Russell Lemke VK3ZQB (pictured), Trevor Niven VK5NC and Colin Hutchesson VK5DK have made several successful contacts over ever increasing distances using Homebrew Narrowband 24 GHz equipment. Both the existing VK3 & VK5 Wideband FM 24 GHz records (VK3XPD/3 – VK5KK/3 71km and Vk5DK/5 – VK5NC/5 38km) were broken while the equipment was still being tested!

To date, the best contact occurred on the 29/2/00 between Russell VK3ZQB/P3, Tower Hill, north east of Port Fairy, Victoria and VK5NC/P5 & VK5DK/P5 located at "The Bluff" approx. 35km west of Mt Gambier. The distance of 171.8 km has now been claimed as a new Australian Distance record. The Two way SSB contact was at 1104 GMT with signal reports of 5-5 to 5-3 with QSB. The contact was made during a period of intense local ducting. The current two-way world record is around 405km.

The equipment used is a result of several years' work. Russell's equipment consists of two 400mm-diameter dishes, one for Receive and one for Transmit. Both VK5DK's & VK5NC's 24 GHz equipment uses the same configuration and power levels. The separate dishes eliminate the need for an expensive (and difficult to find) WR42 waveguide switch.

The heart, of each transverter, is a pair of (Receive & Transmit) DB6NT Mk3 Transverters. DB6NT designed Receive and Transmit amplifiers, along with waveguide filters, are used to obtain a power output of 70mW on transmit. The task of making each module was a combined effort of VK3ZQB, VK5DK & VK5NC with Alan Devlin VK3XPD providing 24 GHz test facilities. Russell performed the delicate mounting of "Surface Mounted" components.

Initial contact was made on 10 GHz. Signals, on 10GHz, were in excess of 5-9+20 during the time of the 24 GHz contact. The approximate 1-degree beamwidth of the 24 GHz dishes made it imperative to use the 10 GHz dish to find the exact direction and elevation. Interestingly, it is reported that the dishes were aimed above the horizon, presumably towards the upper boundary of the duct.

24 GHz is one of the most challenging bands available to the Amateur operator as it has the distinct disadvantage of being near lowest resonant frequency of a Water Molecule. What does this mean? Well, the net effect of Cloud or rain can be up to 1.5 db attenuation per km of path. Needless to say, conditions were warm and dry during the record attempt!

ar

Hamming in the USA

Dom Bragge (VK2JNA) Lucent Technologies (SAS) Senior PCB Designer(R&D) I6 Smith St Chatswood NSW 2067 Tel: (+61 2) 9935 5792 AUSTRALIA dominicb@iucent.com Fax.. (+61 2) 9417 3862 E-:-I http:// www.jna.com.au

I was quite excited about going to North America for a holiday recently, especially when realising how I was going to be able to use my H/T over there. I did some pre-work which included finding out reciprocal licensing arrangements between USA and Australia and Canada and Australia. I also built a 110V battery charger (100mA constant current source) so that I could trickle charge my NiCad's from a power point. And I ordered a copy of the Repeater directory from the ARRL.

I used the World Wide Web on the Internet and came across an FCC website about reciprocal arrangements http:// www.fcc.gov/vAb/amateur/reciparr.html for hams visiting the Unites States who wish to operate there. This was extremely useful as it let me know that going to an FCC office and filling in a form was now not needed. Also, I could use my own callsign as long as I tacked on a "/W3" (or appropriate) on the end as well.

When I jumped on the AMTRAK train at Penn Station, New York City, headed for Washington DC I found I had a few hours to kill. I could've read a book but no, the bug got me! I dug out my trusty FT-530, clipped it to the headrest of the seat in front of me and flicked through the Repeater book looking for 2m repeaters in New Jersey (the state I was now travelling through). It was actually quite a busy time as I had to co-ordinate looking up a map to find out what town we were near, program the next memory channel, listen to the conductor 'musically' announcing the next stop (he was quite a comic) and get a few calls out and hold a meaningful QSO before I left the range of the repeater. It was more complicated because I had to learn how to program my radio to use CTCSS while transmitting and there are all sorts of offsets to use. Some are -600 kHz, some are +600 kHz, some are 1MHz, plus or minus and all over the band, not in a neat group like ours. In the North East of the USA I found there were lots of repeaters and although many of them were "private" (a weird idea for us Aussies to cope with) there were still plenty that were "open" (for all to use). A few times I could access repeaters seemingly easily but got no reply. Sometimes I did get a call back and had a QSO. I was told by one or two people that my accent was so strong that they had trouble understanding me. This might have explained why I didn't get a VHF pile-up. I think that it might be quite rare for them to hear a VK callsign on a local repeater as well!

I programmed in about 23 repeaters along my train route and could access 14 of them. Out of this I had about 8 QSO's on 6 repeaters. It was a lot of fun and those I talked to were quite interested in what I was up to. It was during a normal work day so that probably kept the contacts down somewhat.

While I was in Washington DC checking out the Smithsonian Air and Space Museum, I spent the evenings wandering around 'The Mall' and had my H/T on wherever I went. This was great fun. I made some friends on a couple of the local repeaters and chatted regularly with them during the week. They invited me to use their autopatch and in retrospect, I should have, just for the experience, but I didn't think a telephone call back to Oz would be on the cards anyway! The next weekend was 'Field Day' all over the United States where a lot of Hams get away from the local power supply and into the field to set up portable stations and rack up the contacts. I was invited to go along to the local club's setup but was sadly unable to change my plans at that late stage.

A week later in the holiday, I had to visit my company in Whippany, New Jersey and I found that the local ham club was in the company! When I booked into the Hilton, I asked to get a room as high up as possible - so they put me on the top (5th) floor. From here I could access the repeater at work and had a dozen contacts that night, more than half of whom work for my company or were retired from there. I was amazed that so far in the US I found there were quite a lot of YLs on the bands as well. Most were wives of Hams and it certainly was refreshing compared to the very male dominated airways in Oz. I made particular friends with one fellow from my work and also talked to his (ham) wife and (ham) son on the air. The next day I met him for lunch and met some other hams there as well later in the afternoon. They took me to the roof to view their antennas and see that they had stiff competition for roof space from the 'Wireless' part of the company as one of their test sites is on the roof as well.

When staying in the 35th floor apartment of friends in the middle of New York City, I was able to hit quite a few repeaters. From here I had a few QSOs with people in the city, New Jersey and Connecticut as well. I didn't find the pager interference unacceptable and had a great vantage point. Again I was having fun trying to work out from the Repeater directory which repeaters would be close and which too far away, as most of the names of places were unknown to me. I also got out and visited a couple of Ham Radio Stores in the city, although they were hard to find. The Yellow Pages were almost non-existent for a visitor and even when I got my hands on one, stores, were listed in the "communications, professional" sections hardly mentioned anything Ham - I had to telephone them and explicitly ask if they had ham gear. A little bit expensive here.

In Los Angeles I attempted to make some contacts on 2m but I found that their system was like our UHF CB repeater system in Sydney - clogged up with idiots. Even when I could find an open repeater being properly used the stations left no room between overs for a weak station like me to get in so that was no fun at all. Zero contacts! In LA I simply had to put up with going to Ham Radio shops like HRO in Anaheim and Jun's in West Hollywood. This was certainly fun and I brought back a few 'presents' (for myself) to round out a good adventure.

73 dom VK2JNA

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OPINION

Morse code proficiency is part of the tradition of amateur radio

Max Riley VK2ARZ
6 Baringa Road,
Mortdale Heights 2223

There has been recently an increased amount of pressure on various authorities to remove the Morse code qualification from the list of requirements of the AOCP exam.

There has always been pressure, but it seems to be gathering strength as minority groups in the society find the old adage about squeaking wheels and grease has a basis of acceptance.

Frankly I am disappointed and ashamed to think the young Australians particularly cannot develop the skills to cope with learning about thirty Morse code characters. This lack of commitment should be compared with the learning skills of young Japanese students.

Even an eight year old Japanese child has a firm grasp of the fifty symbols of the Hiragana. By the time that student reaches university entrance level he or she needs to know about 1800 Kanji. These can be learnt only by, at most, two sensory methods. Morse code on the other hand can be learnt by at least three sensory methods.

Learning is not prerogative of the young however. Since my retirement I have had the pleasure of meeting a man who developed an interest in our hobby. He studied the theory by correspondence and subsequently passed the full code test by using the WIA recorded lessons and slow Moors transmissions. He was over 70 when he sat the exams. Since then it has been my pleasure to guide him in various ways so he can trouble shoot defective equipment, with a bit of assistance. He had no skills before starting, and did not have the benefit of an extensive education.

The thing that seems to be overlooked is that Morse code proficiency is part of the tradition of amateur radio. It is as significant as the Trooping of the Colours and the observance of Remembrance Day. When all other means of communication have failed, Morse code can still be used, by a variety of means, to provide effective contact between skilled communicators.

It would appear that a small body of amateur operators will be the only people who will be able to do this in the future. That situation should not be sneered at. It is a powerful reason for us to hold on to our skills in this area.

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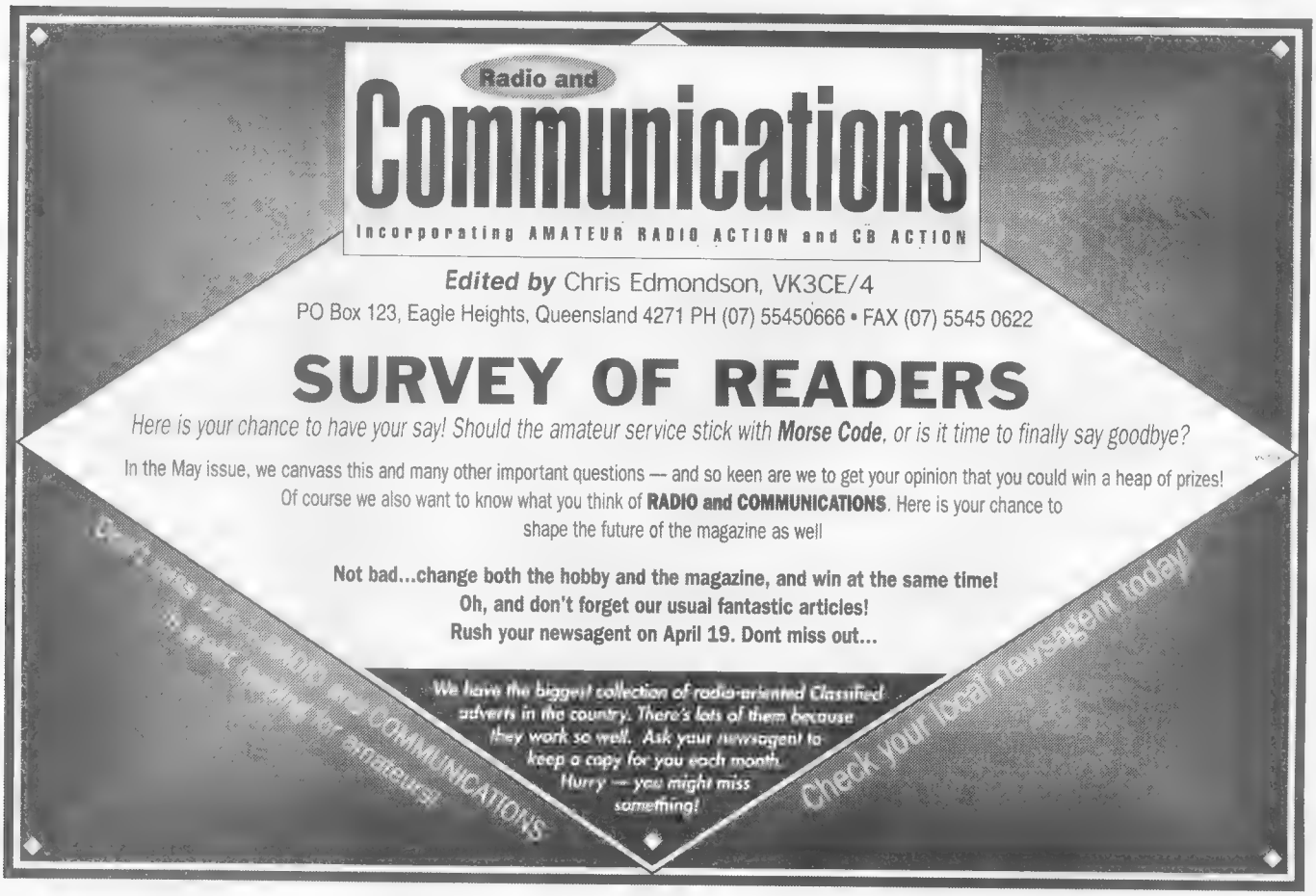
Radio and
Communications
Incorporating AMATEUR RADIO ACTION and CB ACTION
Edited by Chris Edmondson, VK3CE/4
PO Box 123, Eagle Heights, Queensland 4271 PH (07) 55450666 • FAX (07) 5545 0622
SURVEY OF READERS
Here is your chance to have your say! Should the amateur service stick with Morse Code, or is it time to finally say goodbye?
In the May issue, we canvass this and many other important questions — and so keen are we to get your opinion that you could win a heap of prizes!
Of course we also want to know what you think of RADIO and COMMUNICATIONS. Here is your chance to shape the future of the magazine as well
Not bad...change both the hobby and the magazine, and win at the same time!
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Packet: VK5CTY@VK5TTY email: geensee@picknowl.com.au

Internet can be an AR friend

Gosford Field Day

Dot and her helper, Nancy, had a busy day at the ALARA table this year. She had visits from Val VL4VR and Anne VK4ANN. both well known to many of us either on the air or at the ALARAMEETS. Other visitors to the stand were Agnes VK2GWI, Suzanne VE3EPO/VK2EPO and Beryl VK2BBM. Nina VL2INZ stayed for a long chat. She is a newcomer to the radio and to Australia but has come up on the Monday nets a number of times. There were, as always many others who stopped to look at our photos and ask about ALARA

A most interesting visitor to the table was a ten-year-old girl, Gloria, who is doing a Novice course through the Internet. Her father is doing it with her so there may soon be two amateurs in that family. The fact that she can and is doing the course through the Internet indicates the two types of communication can help each other. Many "Jeremiahs" tell us amateur radio will be killed off by the Internet, yet here is a demonstration of how it can help people become amateurs. Let us use the Internet to tell others the benefits of amateur radio, especially the young ones. The address for the Internet Amateur Courses is vk2wi@ozemail.com.au

International YL2000 in Hamilton

All of you who indicated interest should have received the information, and many already filled in forms and sent deposits. However, if you have only just realised you will be able to go after all, I am sure Biny ZL2AZY and her helpers will be interested to hear from you and will be able to fit you in.

I hear there will be a number of DX members at the Meet, so it could be an opportunity to meet those familiar voices.

Touring? or visiting another State

Any time you are in a new city or town it is a good idea to put out a call on 2-metres. There are YLs in many places. They are not always monitoring the airwaves but many OMs are happy to use another band or even the telephone to let the local YL know there is a visitor. You cannot always fit in a meet, but a chat can be fun and will be remembered by you and by the local lass — there are some YL amateurs who live many kilometres from any other lady with similar interests.

Passing through Bordertown? Mary VK5AMD would love to chat. Mildura? Marilyn VK3DMS can be on 2-metres at most times of the day. Passing through Maleny or travelling up the Bruce Highway? You may catch Val VK4VR or Anne VK4ANN or June VK4SJ. In Murray Bridge, Meg VK5YG always has the kettle on for visitors if she is home. Why not put out a call?

Where there are several YL operators who meet frequently, it may be possible for you to have a cuppa together, or meet for lunch. In VK5 this is always possible, so please don't miss the opportunity. We would all love to say "Hello".

Two recent silent keys — OMs of members

Laurie, OM of Marjorie VK2AMJ passed away late last year and Graham, OM of Bev VK4NBC passed away at the beginning of March. Our condolences go to both ladies and their families. They and their OMs have been part of ALARA's life over the years.

A Flight over Antarctica

Mary VK3FMC recently took one of the flights over Antarctica and loved it. It reminded me of the flight I took many years ago. There is so much to see if you have clear skies over the remote continent.

The 'leads' in the ice through which ships make their way appear as black lines through the sheets of blindingly white ice. Some seem to go forever, others peter out after a short distance. You realise why many of the ships that go to Antarctica have little planes or helicopters on board. If the lead you are using begins to become thinner you need to know if this a temporary thing or if you must force your way through the ice to another lead.

The icebergs you see from the plane must actually be enormous, but they look like irregular white blobs floating in a black sea.

Over the land the reverse is true. Odd shaped masses of black rocks poke through the sweep of white. These are called Nunatuks and are actually the peaks of mountains. The depth of the ice is unimaginable.

On my trip we were lucky enough to fly over the Russian base, a tiny line of black oblongs that were the huts. We could hear the pilot speaking to the radio operator at Australia's Davis Base although it was not in sight. This was all before I got my licence. Absolutely amazing and mind-blowing.

If you are thinking about going on one of these flights hesitate no more. It will be an experience you will never forget.

Or if you are asked to act as the QSL manager for someone going to Antarctica accept the invitation. We did this for Keith VK5OQ twice and found it most interesting to see all the different places with whom he made contact. Unfortunately he didn't make DXCC from it, but there were 81 separate countries with hundreds of QSL cards.

How to send your news

By packet VK5CTY@VK5TY By email geencee@picknowl.com.au

Please send me any news that you think might interest others. There are many readers of this column who want to know what you are doing.

Hazards of camping

Mary VK2BEM, camping with a grandson to keep amused, ignored the rain one night to finish a game of Trivial Pursuit. Then she discovered the back flap had been left down. When she lowered it the bucket or so of rain that had collected in it came in though the open window onto the bed. Guess who was changing wet bedding at 10pm??

Townsville is still there!

The Monday night Net was very relieved to hear Sally VK4SHE come up recently — wet but otherwise OK. Down South we had all been hearing about the enormous amount of rain they had had so we were concerned. We were also staggered when Sally told us they had had 28 inches of rain (over 700mm) by the end of February!! No wonder it cannot be absorbed into the soil.

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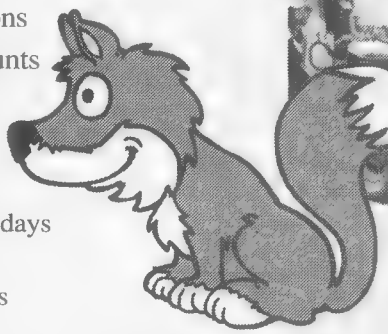
52nd Urunga Radio Convention

Easter Weekend, 22 & 23 April 2000

B J Slarke VK2ZCQ

- Fox hunts
- Old Gear Display and Home Brew equipment
- Lucky door prize, ladies and gents registration
- Disposals Table (included in registration) — bring gear for sale
- Raffles, quizzes & competitions
- 80 metre novice pedestrian hunts for children
- Lunches catered for



Awards:

Overall winner for events over two days
Jack Gerard memorial Award
Trophies perpetual shield to winners

Cost:

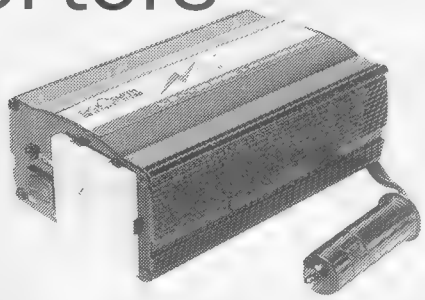
One day: OM $8, XYL $6, Family $14
Two days: OM $10, XYL $8, Family $18

Photo: Crieff Retallick VK2XO founder of the Urunga Radio Convention, in front of the Ocean View Hotel, c1951

Try This

Power Inverters

Dick Smith Electronics has two power inverters for powering a range of 240volt equipment via cigarette lighter or other 12 volt source) in a car or caravan.



The two new inverters are ideal for caravan users and car travellers who wish to power small televisions, VCRs, personal computers, small kitchen appliances and many other items.

The entry model (Cat No. M5100) has 150 Watt output power and the next model (Cat No. M 5101) has an output power of 300 Watts.

Both models have under-voltage and over temperature protection.

The two new models are compact and lightweight — the M5100 weighs only 700 grams while the M 5101 weighs 900 grams.

The Dick Ssmith electronics power inverters are available from Dick Smith electronics stores Australia-wide and Dick smith electronics PowerHouse stores at Penrith, Bankstown, Moore Park in NSW and Carnegie in Victoria for a retail price of $149 for the M 5100 and $229 for the M 5101, or mail order by calling Dick Smith Electronics Direct Link on 1300 366 644 or visit the Dick Smith Electronics website at www.dse.com.au

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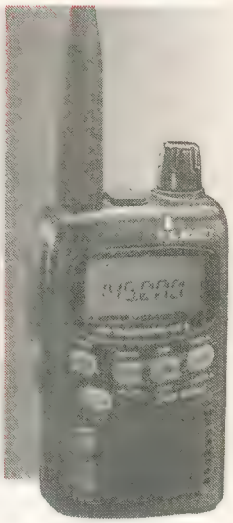
DON'T MISS THE ACTION!

VX-IR 2m/70cm Micro Handheld

One of the worlds smallest dualband handhelds, just 47 x 81 x 25mm (W.H.D.) including a high capacity 700mA/H Lithium-ion battery! The VX-IR covers both 2m and 70cm amateur bands, plus offers AM/FM and TV sound reception, 2 hour fast charging as standard, simple settings and a large LCD screen.



Features

- Tx: 144-148, 430-450MHz
- Rx: 0.5-1.7MHz, 76-300MHz, 300-580MHz, 580-999MHz (cellular locked out)
- Output: 2m/70cm 0.5W (at 3.6V), 1.0W with external DC
- 291 memories, most with alpha naming
- AM, FM(n), and FM (w) reception modes
- CTCSS encode/decode
- 31 smart search memories
- Tone search for CTCSS and DCS
- Includes FNB-52LI 3.6V 700mA/H Lithium-ion battery, regulated AC adaptor/charger, antenna and belt-clip.

D 3665

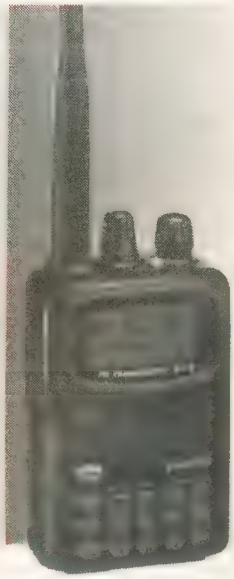
YAESU

$399

2 YEAR WARRANTY

VX-5R 6m/2m/70cm Deluxe Hand-Held

Tiny yet incredibly rugged, the VX-5R provides 6m, 2m and 70cm amateur band operation with 5W output as standard (4.5W on 70cm), made possible by a unique PA design and a super high capacity 7.2v 1100mA/H Lithium-ion battery. Plus, ultra-wide coverage VHF and UHF as well as AM medium-wave and shortwave reception facilities are provided, along with a large backlit dot-matrix LCD screen. All this in a diecast aluminium enclosure just 58 x 87 x 28mm WHD (without knobs or antenna)!



Features

- Tx: 50-54, 144-148, 430-450MHz
- Rx: 0.5-1.8MHz, 1.8-16MHz, 47-729MHz, 800-999MHz (cellular blocked)
- Full feature keypad, CTCSS encode/decode, digital code squelch
- Comprehensive menu system
- Over 200 memories
- 8 digit alpha-numeric memory labelling
- 5 battery saving systems, plus Tx/Rx usage monitor
- Spectra-Scope™ for monitoring adjacent channel activity
- Comes with FNB-58LI Lithium-ion battery, flexible antenna and AC adaptor/charger

D 3670

YAESU

$699

2 YEAR WARRANTY

BONUS BONUS BONUS

Purchase a VX-5R during April or May 2000 and receive a CD-15 Desk Rapid Charger (D 3672 valued at $49.95) at no charge!

Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny dual-band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid diecast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

Also includes:

- Wide dynamic range receiver for greatly reduced pager breakthrough
- Huge receiver coverage – 100-230, 300-530, 810-999.975MHz (Cellular blocked)
- 180 memories and a variety of scanning functions
- Built-in CTCSS encode/decode, battery voltage metering
- Designed for 1200 and 9600 baud packet operation
- Tiny remoteable front panel (requires optional YSK-90 separation kit)
- Includes MH-42 hand mic, DC power lead, and easy to follow instructions.

D 3312

YAESU

$899

2 YEAR WARRANTY

YSK-90 Front Panel Separation Kit D 3317 **$129.95**

FOR ALL YOUR COMMUNICATION NEEDS

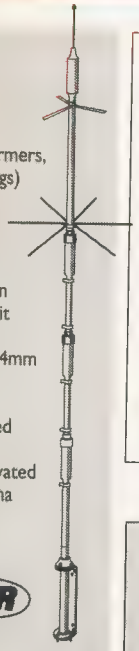
Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling. Wide-band coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at 2:1 SWR. An optional 30m resonator kit can be installed without affecting operation of other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability.
At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

D 4920

$399

HUSTLER



30m Resonator Kit

Adds 30m coverage to the 5BTV and includes all hardware.

D 4921 **$99.95**

6m 1/2 Wave Base Antenna

A rugged Australian-made vertical antenna designed to cover the 51 to 54MHz range, with minimum SWR around 53MHz. Built using high tensile T81 grade aluminium, it's just 2.9m long with a sealed base section and 100W minimum power rating. Complete with mounting hardware.

D 4825

D&G Antennas

$69.95

2m Heavy Duty Base Station Antenna

For use where long-range omni-directional 2m band (144-148MHz) coverage is required. This 3.4m long 1/2 wave over 1/2 wave colinear vertical antenna provides approx. 5dB gain, and is housed in a very tough single-section fibreglass radome for all-weather protection. The strong aluminium base section is fitted with an N-type socket in its base for coax cable connection.

D 4822 BENELEC

$139.95

WIA Callbook

Wide range of information for Australian Amateurs plus callsign and address listings.

B 2344

NEW **$17.95**

ARRL Handbook

77th edition of this famous publication. Incredibly wide range of information for operators and constructors.

B 2237

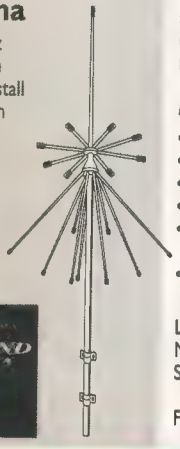
NEW **$59.95**

D-130J Discone Antenna

Covers the frequency range 25-1300MHz and comes with mast-mounting hardware and instructions. Easy to assemble and install with extensive stainless steel construction making it extremely durable. A wide frequency coverage means that it's ideal for scanning receivers, as well as transmitters up to 200W PEP for the 6m, 2m, 70cm and 23cm amateur bands. Uses an SO-239 coax socket for easy coax connection.

D 4840

$179



45-Memory Shortwave Receiver

The ATS-808 provides continuous 150kHz to 30MHz coverage, so you'll catch all the action on the shortwave bands plus medium-wave (AM bands) and, with earphones, FM stereo. You can select wide or narrow filters on SW bands (as well as attenuation for extremely strong stations) to ensure optimum reception quality under differing conditions. Requires 6 x 'AA' batteries or mains adaptor (M 9626 recommended).

D 2829

Features:

- Keypad frequency entry • Dual time settings
- Desk stand • Signal strength meter
- Narrow/wide IF filters for improved SW reception
- External shortwave antenna socket
- Built-in whip antenna • 13 SW band divisions with direct access buttons
- Complete with stereo earphones and protective case.

Longwave: 150-519kHz
Mediumwave: 520-1710kHz
Shortwave: 1.711-29.999MHz (continuous) or in 13 pre-set SW bands)
FM: 87.5-108MHz

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721 DPS s/c

WIA Division Directory

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division Address	Officers			News Broadcasts **Note: All times are local. All frequencies MHz.**	Fees
VK1 ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Gilbert Hughes Peter Kloppenburg Edwin Alcott	VK1GH VK1CPK VK1NBH	VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.00pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org	(F) $72.00 (G) (S) $58.00 (X) $44.00
VK2 NSW Division 109 Wigram St Parramatta NSW (Office hours Mon-Fri 1100-1400) (PO Box 1066, Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer Web: *http://www.ozemail.com.au/~vk2wi* e-mail: *vk2wi@ozemail.com.au*	Michael Corbin Eric Fossey Eric Van De Weyer	VK2YC VK2EFY VK2KUR	From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.	(F) $69.00 (G) (S) $56.00 (X) $41.00
VK3 Victorian Division 40G Victory Boulevard Ashburton VIC 3147 (Office hours Tue & Thur 0830-1530) Phone 03 9885 9261 Fax 03 9885 9298	President CEO Secretary Web: *http://www.tbsa.com.au/~wiavic/* e-mail: *wiavic@alphalink.com.au*	Jim Linton Barry Wilton Peter Mill	VK3PC VK3XV VK3APO	VK3BWI broadcasts on the 1st and 3rd Sunday of the month at 8.00pm. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WI on Victorian packet BBS and WIA VIC Web Site.	(F) $75.00 (G) (S) $61.00 (X) $47.00
VK4 Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 3221 9377 Fax 07 3266 4929	President Secretary Treasurer Office Mgr e-mail: *office@wiaq.powerup.com.au* Web: *http://www.wia.org.au/vk4*	Colin Gladstone David Jones Bill McDermott John Stevens	VK4ACG VK4OF VK4AZM VK4AFS	VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site	(F) $85.00 (G) (S) $72.00 (X) $56.00
VK5 South Australian and Northern Territory Division (GPO Box 1234 Adelaide SA 5001) Phone 08 8294 2992	President Secretary Treasurer web:*http://www.qsl.net/wiasant*	Jim McLachlan David Minchin John Butler	VK5NB VK5KK VK5NX	VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) $77.00 (G) (S) $63.00 (X) $49.00
VK6 West Australian Division PO Box 10 West Perth WA 6872 Phone 08 9351 8873	Acting Pres. Secretary Treasurer Web: *http://www.omen.net.au./~vk6wia/* e-mail: *vk6wia@omen.net.au*	Cliff Bastin Christine Bastin Bruce Hedland-Thomas	VK6LZ VK6ZLZ VK6OO	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website	(F) $69.00 (G) (S) $59.00 (X) $38.00
VK7 Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6425 2923 Fax 03 6425 2923	President Secretary Treasurer Web: *http://www.wia.tasnet.net*	Ron Churcher Tony Bedelph John Bates	VK7RN VK7AX VK7RT	VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.	(F) $88.00 (G) (S) $75.00 (X) $55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

Membership Grades
Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)
Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Division News

VK4 Notes Qnews

By Alistair Elrick VK4FTL
WIAQ Councilor and QTC editor

Australian Radio Certificate Scheme (ARCS)

This scheme is the brainchild of Ron Bertrand VK2DQ and Chris Edmondson VK3CE who visited the February WIAQ Council meeting to present their proposal. They asked the Council to endorse the scheme and give practical support in the issuing of Certificates. It is a scheme that is hoped to slow or reverse the dwindling ranks of Amateur Radio operators. Ron VK2DQ has put in the hard yards, and Chris VK3CE, Publishing Editor of Radio and Communications magazine, will be the promoter and the WIAQ will supply the manpower.

BUT what is ARCS I hear you say.

The Australian Radio Certificate Scheme is a way of rewarding effort, in showing prospective radio hobbyists that work and effort should have some form of reward. We need to be doing things TODAY that although they may not provide dividends for perhaps two or three years MOST CERTAINLY WILL PROVIDE NEW AMATEURS.

ARCS is a web based study course, approved and endorsed by the WIAQ and is made available as a free download from the Internet. Certificates in 3 grades will be made, and in studying for these grades the hobbyists will eventually find themselves knowledgeable enough to sit for an Amateur Licence. Already target groups include ALL Secondary Schools AUSTRALIA wide, Youth Clubs, CB Clubs and many others.

Now we need YOU to help spread the word and the 'word' in full is in the March edition of Radio and Communications magazine. Look in Editorial Comments on page 5 and at http://www.radiomag.com

VK4 QSL Bureau

Laurie VK4BLE will cease as QSL Manager for the VK4 division at the end of this Council year, 25th of March 2000. Laurie has put some 12 years of working for the WIAQ into our hobby and certainly deserves a 'break'.

He has taken the QSL Bureau from being a liability to an operation that Council has not had to use any of their funds to support. Laurie will also complete the March mail out in conjunction with a new manager (recruit/volunteer) and post out all cards prior to hand over on the weekend of the 25/3/00.

Well done Laurie and thanks come from all the users of the QSL Bureau and the members who realise the sterling service you have given in all aspects of your WIAQ work.

FunDay 2000

A great day was had by all those who attended. Caboolture club and Brian VK4BBS are to be congratulated. Throughout the day close on a hundred amateurs rolled up, plus a thousand or more general "visitors".

Prizes went to amateur displays such as APRS, WICEN, WX SATELLITES, RTTY and PACKET, HF, FOXHUNTS and the major prize for the club who helped make the event by energy and manpower, Caboolture. The Club will hold the Funday Shield for 12 months and also get the 12-month subscription to Radio and Communications magazine.

Barcfest 2000

From the Brisbane Amateur Radio Club comes the date we all look forward to in SouthEast Queensland, BARCFEST. It will be held on May 13th 2000. The venue will be the same as in previous years at the Kelvin Grove High School in the auditorium complex. This will be the 18th BARCFEST and it goes from strength to strength each year.

South Burnett Diplexers are go!

The clubs' working bee in February went very well with the construction of the diplexers. Jim VK4GYM came up with a novel idea for the construction of the contact fingers and it worked very well. Henry VK4HGS and Peter VK4PGF showed great skill in near vertical cuts with a hacksaw in the end of the outer tube. John VK4JL added much skill in the marking out and cutting for various items for the construction. The diplexers were finished by about 1700 and then the tuning was commenced.

The end results were in line with figures as quoted in the ARRL antenna book, so there were some relieved workers when it was finished. The cavities are all alloy and suitable corrosion / conduction treatment was undertaken on assembly to ensure a long life. Now there are a group of amateurs who have more knowledge on the internals of diplexers, which should help in any future repairs.

South Burnett club members who were unable to make it remember that very soon there will be the tower raising ceremony so keep your monitors warm for the next exciting installment.

History!

Alan Shawsmith, VK4SS, long time WIAQ worker and of late our Historian has honoured the Gold Coast Amateur Radio Society by offering to place his valuable collection of historical equipment in their care. Its value is not able to be calculated but is said to be worth thousands of dollars. Alan is also prepared to donate a considerable sum of money; sufficient to purchase a double prefabricated garage, slab and electrical wiring etc. The advantages of the Gold Coast having such a collection cannot be over emphasised, as it would create a lot of interest not only Statewide but Nationally as well.

We in the Amateur Radio fraternity thank Alan for the many years of dedication to Amateur Radio and the WIA.

73's from Alistair

continued next page

continued from previous page

VK7 Notes

"QRM" Tasmanian notes

All the "tumult and the shouting" of the various branch Annual meetings have now passed, all held actually in a very good spirit (definitely not 'Scotch!'), and we now look forward to the 18th. March weekend when we hold our Divisional Annual meetings and dinner at Kingston, near Hobart - more about that next month.

The Tasmanian Rally car rally in late February was extremely successful from the WIA angle. 23 Amateurs took part, providing Communication from all over the very difficult sector venues - over mountains, through gorges - no problems for our 2metre and 70cm. repeaters and simplex channels. They worked faultlessly. The S.E.S. was handling the police networks etc. but when their system broke down on Sunday we took over the lot!. Wonderful P.R. for us "only amateurs"!!.. We had three reporting desks manned feeding into a VERY sophisticated computer programme which allowed the Rally organisers to know the exact location of any of the 150 odd cars. The Rally organisers had nothing but praise for the Rally communications manager Phil Harbeck, VK7PU, his radio room manager Tony Bedelph, VK7AX and the other amateurs and helpers. Methinks we'll keep the job next year!.

In the South, Gavin, VK7HGO and his band of helpers provided the communications for the "Clean-up Australia" day on Sunday, 5th March. Another good job well done.

The 2metre morse practice sessions in the south have the usual problem of not enough helpers - hopefully Mike can find enough to keep going. Theory classes are commencing again in April.

The big challenge down south though is the weekly "yes-no" fox-hunts. Really serious stuff this. At the moment Scott Evans, VK7HSE leads the field but he can feel the other aspirants hot breath on his neck. A case of "listen for the next exciting episode"

Look up out latest Tasmanian website - www.qsl.net/vk7cht - the site for our Central Highlands Amateur Radio Club. You MIGHT be able to talk them out of one of our famous Rainbow Trout but don't hold your breath.

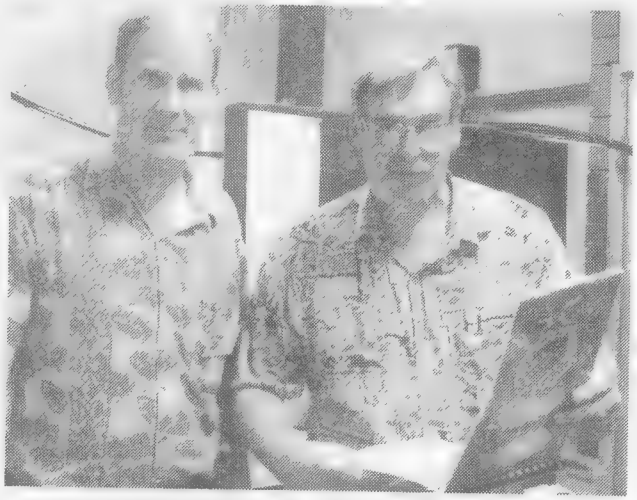
I am not putting up for election as Divisional President again - three years, I feel, is the maximum time that a President should hold office. I must say I have really enjoyed the privilege of holding this office. The Tasmanian amateurs are a great bunch to work with. There are some very able and dedicated people here who could take the reins and I wish the incoming President as good a time in the job as I have had.

Cheers for now.

Ron VK7RN.

Radio Room manager Tony Bedelph VK7AX (standing), Andrew Cooper (Hobart), pencillor, with John Webster VK7KDR at the mic

John VK7KDR pencilling, Ron VK7RN at mic



Rally Communications Manager Phil Harbeck VK7PU with Tony Bedelph VK7AX in conference

VK2Notes

Pat Leeper VK2JPA
patleep@bigpond.com

This is a final reminder to members to attend the Annual General Meeting of the VK2 Division to be held on Saturday 15th April at Amateur Radio House, 109 Wigram Street, Parramatta. The Council would like to see a good roll-up to see who the new members of Council will be, as well as take part in discussion as it happens.

A quiet moment on the WIA stand

The Division attended the Central Coast Field Day at Wyong Racecourse on 27th February with a stall featuring new books and deceased estate items. The day was very successful and almost all the Directors were there to answer members' questions and man the stall. The weather held off until late in the event and there seemed to be a very good attendance making the most of the flea market in the morning.

The Division's Packet Radio BBS VK2WI was changed over to the Y2K compliant versions of the FBB program with only minor problems. The only glitch of note was that bulletins from 1999 were not being deleted although they were expired and had to be deleted manually. Despite reports of a decline in packet radio activity the BBS is still quite busy.

There is a magazine search facility on the BBS, which contains the same information as the machine in the divisional library. This facility enables anyone to search for articles in the common amateur radio magazines on selected subjects.

The Division is an active participant in the VK2DQ Internet course. A large number of enquiries have been received with many enrolling for the course. The total number of students being managed by all the course supervisors, including those appointed by this division, is quite large and must be approaching 100. New students can undertake this free course by sending an email to vk2wi@ozemail.com.au.

A conventional mail correspondence course is also conducted by the Division and enquiries can be made to the WIA N.S.W. Division office by mail, telephone, fax or email to the addresses shown on the Divisional information page at the back of this magazine.

On 29th April the Warringah Amateur Historical Radio Association - now a part of the Hornsby and District Amateur Radio Club - will again celebrate International Marconi Day. The callsign will be AX2000/IMD. The first part of the call has been allocated to the NSW Division to celebrate the Olympic year and should be announced, as Alpha Xray Two Zero Zero Zero. This callsign is available for clubs and members for a period of one week and applications are available from the NSW office. Nine clubs have already applied for dates, so don't delay if you want to use the callsign for a special period. The VK2 division will be running another special callsign from the divisional station for the period covering 14th September to 29th October, with awards for contacts with this and other VK2 stations. A special QSL card will also be issued.

A correction for your diary —the next Affiliated Clubs Conference will be on Saturday 20th May 2000, not 6th May as previously advised — remember it's now the 20th May. Come along with your ideas and/or grievances and give the Council something to work on for the members.

continued next page

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VK1 Notes

Forward Bias

Peter Kloppenburg VK1CPK

February is the month in which the ACT Division holds its Annual General Meeting. So it was on the 28th when we got together in a heap, sang the praises of our hard working supporters, complained about the things that went wrong, and decided who was going to be in, on the decision making processes during the coming year. The Division has only 153 members, but to keep them happy involves a lot of hard work. For example, the QSL Bureau managers spend much of their time sorting QSL cards. These include incoming and outgoing cards of which addressees must be checked, packages made up, and postage worked out. Tex Ihasz (VK1TX) and Mike Jenkins (VK1MJ) deserve much commendation for their dedication and enthusiasm in running the Bureau so efficiently. There are others as well. Waldis Jirgins (VK1WJ), who managed the Sunday, broadcasts on HF and VHF, together with Ray Reinholtz (VK1PRG), Tex Ihasz, and Phil Longworth (VK1ZPL). There was Peter Ellis (VK1KEP), who knows how to spread the word in the media about Amateur Radio. Then there was Mike Walkington (VK1KCK) and Neil Pickford (VK1KNP), they managed the Technical Advisory Committee and provided answers to questions from the Committee, members, and non-members alike. Members of the Committee did not sit still either. Gilbert Hughes (VK1GH), with Paul Bell (VK1BX) and Paul Elliot (VK1Tee) spend tremendous effort over long periods of time putting up a new tower at Mt. Ginini. They are still working on it when time permits. Our WICEN State coordinator, Phil Longworth, provided active leadership to his team and was very successful in a wide range of activities with car rallies, walkathons, etc. John Woolner, our secretary, wrote stacks of letters, organised exams, and provided historical background to events from the past. The Division did very well under the financial leadership of Les Davey (VK1LD) as Treasurer. Les paid all the Division's bills in time, and kept the books accurately and in accordance with accepted accounting rules.

The line up of the Committee Members for 2000 is as follows: Gilbert Hughes, President; Phil Longworth, Vice-President; Glenn Dunstan, Vice-President; Edwin Alcott, Treasurer; Peter Kloppenburg, Secretary; including Chris Davis, Richard Elliott, and Ernest Hocking. Chris and Richard are both heavily involved with the Novice and AOCP classes, and Ernest is chairman of the ATAC group. The outlook for 2000 is positive. A reduction is expected in the Morse code speed requirements for the AOCP. This fact alone will change the mix of Novice, and Limited, callsign holders, and also provide an incentive to those who are not licensed yet, including Citizen Band (CB) amateurs. One other development affecting ACT amateurs is the proposed system of linking our repeaters with those of other cities and towns. Detailed plans have been distributed to interested clubs and the NSW Division of the WIA. Negotiations are under way for the purchase of suitable equipment. As soon as the money has come in from participating clubs, the required equipment will be ordered, distributed, and installed by members of the participating clubs. When the installation is completed, you will be able to use your 70 cm gear for making contacts halfway across NSW. Watch this space folks! The Division needs a new Broadcast Officer! Waldis has gone overseas for a well-deserved vacation. He will not do the broadcasts this year because of other developing interests and commitments. Do YOU like gathering bits of amateur radio related information, talking to amateurs with a passion, or just reporting what the Division is up to? There is a need for a broadcast officer who can give weekly updates about what goes on in the ACT. Most of the 153 members, and some of the non-members, get information about the local scene from Forward Bias in A.R. But this needs to be supplemented with fast breaking news to short-circuit the lead-times for A.R. and the interval between General Meetings. Non-members can only find out what's going on from listening to the broadcasts. By the time you read this, a broadcast charter will exist that provides details of how to run a broadcast for amateurs and what should be in it. For details contact Gilbert Hughes on 6254 3266 or email him at ghughes@dynamite.com.au

The Division now organises **Trash & Treasure** events on the following dates this year: **April 24**, August 28, and November 27. The last date is also the last General Meeting of the year, and will be celebrated in a Party atmosphere. I hope to see all of you at the next General Meeting, which will be held on April 24, at the Griffin Center, Civic, Canberra City, at 8.00 pm. Cheers.

G. & C. COMMUNICATIONS

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CLUB NEWS

Adelaide Hills Amateur Radio Society

AGM Report

The AGM was a short one. There were sufficient nominations to fill the vacancies on the committee so no election was held. The current committee is:-

President	Geoff Taylor	VK5TY
Vice- President	Lloyd Butler	VK5BR
Secretary	Alby Wood	VK5TAW
Treasurer	Bryan Trott	VK5PBT
Committee members		
	Jim Tregellas	VK5XJT
	Geoff Bridgland	VK5JDZ

There were two 'Amateurs of the Year' nominated by the President:-Nicholas Bluhm VK5CX who joined the club at the beginning of the year and finished the year with a full call, and Lindon May the youngest amateur, who upgraded during the year to VK5SWR and is an active participant in all Club activities.

The talk about the design of loudspeakers was extremely interesting. Standard electromagnetic loudspeakers were explained in detail and demonstrated by the new Rola 15UE being manufactured by Graham VK5ZFZ, who now owns the "Rola" name.

Then the designs (successes and failures) of electrostatic loudspeakers was explained and demonstrated with hands-on material. More details of this lecture may appear in a later edition of AR.

2000 program

The program for the next few months will give us two talks, one about the future for VHF/UHF bands by Joe VK5WU and one about shortwave broadcasting by Jerome van der Linden. There will also be a Members' Buy and Sell.

If you live in or near Adelaide or are visiting on the third Thursday of the month come along to a meeting. All are welcome. Committee members are QTHR the Callbook for further information.

John Moyle Field Day

AHARS will be participating the John Moyle Memorial Field Day in the HF section, again. If you hear us, please give us a call. If we hear you we will give you one. As well as being a lot of fun this activity has a serious side as preparation in case it is ever necessary to operate radio equipment under field conditions away from mains power.

High Frequency "Pactor" BBS

VK5BAR

The "Adelaide Hills Amateur Radio Society" continues to operate a **PACTOR BBS** on 3.6 and 21 MHz, for use by any High Frequency station in Australia. It was established to allow stations not able to access local VHF/UHF Bulletin Boards, to utilise the AX25 Packet Network.

The BBS operates under the Callsign VK5BAR, on dial frequencies 3.632 and 21.075 MHz, using Lower Sideband, with a "Mark" tone of 2095Hz.

These transmissions may be described by some purists, as being on the "Mark" frequencies of 3.629905 and 21072.905 MHz. Frequencies are 21MHz during daylight and 3.6MHz during darkness, in Adelaide, South Australia.

All traffic lodged on VK5BAR is cleared to the AX25 network, via VK5SPG (run by the South Australian Packet Users Group), hourly. Australian Amateurs are encouraged to use the system. Information on conversion of older RTTY Modems, and information on suitable software, for use on PACTOR, is available on request.

Further information on the System, and PACTOR in general, may be obtained from:

Rob Gurr,VK5RG, 35 Grandview Ave.,
Urrbrae, SA, 5064
Telephone: 08 8379 1889
Packet:-VK5RG@VK5SPG
E-mail:- gurrrc@picknowl.com.au

Moorabbin & District Radio Club

Hamfest Reminder

A reminder that the MDRC's Hamfest will be on Saturday May 13, starting 10am. The venue will be the same as last year - the Brentwood Secondary College in Watsons Road, Glen Waverley (Melways 71 D7). Enter off Heath Street. Entry is $4.00. Some very attractive door prizes will be offered.

Wally Hunt VK3JWH has once again offered himself as hamfest organiser. If you'd like to book a table, contact Wally on 9318 0197 (home), 0419 356 263 (mobile) or 9332 2328 (fax). Tables will be allocated on a first come first served so be quick.

The MDRC Hamfest has become Melbourne's most popular hamfest. Over 400 people attended last year.

Don't miss it!

Hobby Show a success

Once again the MDRC ran a stall promoting amateur radio at the St Kilda Hobby Show back in February. The event was a great success, with numerous contacts being made through amateur satellites. A more comprehensive report and pictures will appear in a future AR.

Radio on Rails logs due

How did you go with Radio on Rails, held earlier this month? If you made contacts in this fun event, make sure you get your logs to us by the end of the month. Logs should be posted to *Radio on Rails*, MDRC, PO Box 58, Highett, Vic, 3190.

Peter Parker VK3YE Publicity Officer
Moorabbin & District Radio Club
parkerp@alphalink.com.au
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TECHNICAL ABSTRACTS

Gil Sones VK3AUI
30 Moore Street
Box Hill South Vic 3128

New Life for the FT200

In *Technical Topics,* the *Rad Com* column of Pat Hawker G3VA in November 1999, the replacement of the final tubes with 6146Bs was described. This came from an earlier 1995 article in Radio ZS by Roger Davis ZS1J/ZS5L. The original line output tube finals were 6JS6 types which are now difficult and expensive to replace. The 6146B being a transmitting tube is easier to obtain and cheaper now.

The circuit and wiring diagram is shown in Fig 1. The sockets must be removed and replaced with octal sockets oriented as shown in Fig 1b. The orange wire supplying the screens should be cut short and sleeved. The screens are supplied from the 350 Volt line supplying the driver,12BY7, via a series 100 Volt Zener diode or alternatively a series OB2 regulator. The supply can be found at the 'cold' end of the rf choke supplying the driver anode tuned circuits. The zener or regulator tube will drop this to the 250 Volts for the 6146 screens.

The neutralising circuit is modified by placing a 200 pF 1 KV capacitor in parallel with C40 the bypass capacitor at the cold end of the 12BY7 driver tube anode circuits.

In order to forestall a fault found in the FT200 you should also replace C55 the 100 pF coupling capacitor from the driver plate circuit to the final tube grids as this can become short circuit. A 100 pF 1 KV capacitor is required. If one is not available protection can be provided by wiring an additional capacitor of 1000pF 1KV in series. This fault can have serious consequences as when the coupling capacitor fails the finals have positive on the grids and draw excessive current which can be bad for the finals and also for the power supply.

A modification to the power supply was also given to increase the final HV voltage. This involved replacing the silicon rectifier diodes with a eight 1N4007 diodes and 470K parallel resistors. The Yaesu PCB makes provision for this but was originally only provided with four diodes and parallel resistors. The transformer can then be moved from the 460 V tap to the 600 V tap. This increases the HV to 850 Volts. Locally many FT200's were supplied with a local PSU in lieu of the Yaesu PSU so this part of the modification may not apply.

The new finals will have to be aligned and neutralised. First set the bias to 50 mA final current. Then align and neutralise the finals as per the book.

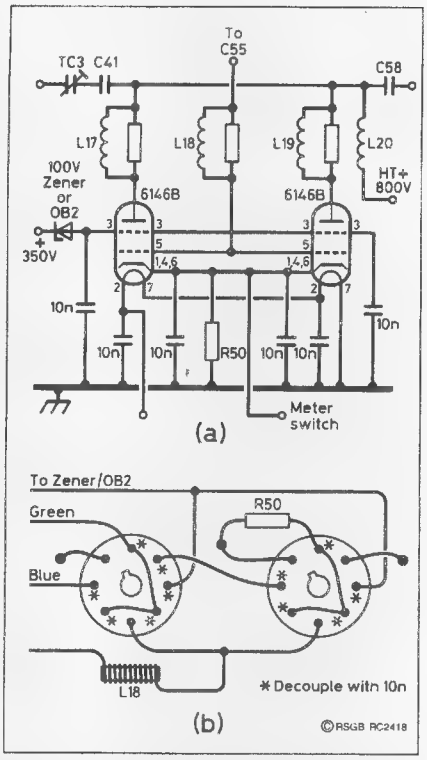

Fig 1. Circuit and Wiring Diagram for Replacement of FT200 finals with 6146Bs.

Blocking Non Locked PLL Signals

A way of preventing the radiation of an unlocked signal at switch on was presented in an item in the Technical Topics column of Pat Hawker G3VA in Rad Com November 1999. The item came from Dave Porter G4OYX/G3WOF. The original use was in a VHF FM broadcast transmitter.

The circuit used is shown in Fig 5. A 555 timer is used to provide a time delay at switch on. The 555 timer controls the gain of a low power stage in the transmitter and so allows the PLL time to stabilise before a signal can be put to air.

The time delay used was appropriate to broadcast requirements but a modified version could be used in amateur applications. The circuit could be useful in applications such as beacons or with a suitable delay could be used to allow a packet system to stabilise at switch on prior to putting out a signal.

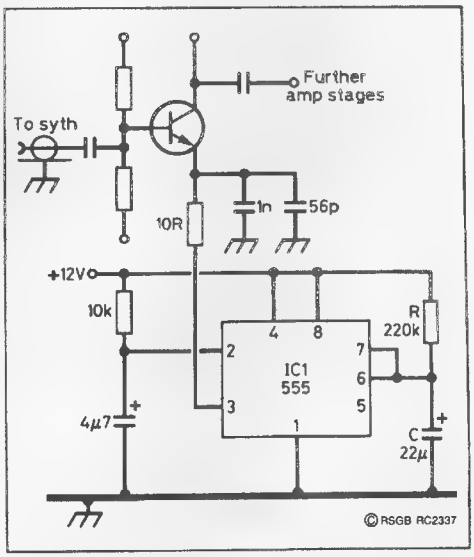

Fig 5 PLL Start Up Timer.

Elevation Rotator

The elevation rotator for a VHF/UHF satellite array can be hard to find. They are not as widely available as the usual rotators and are often lacking in capability for reasonably large arrays. The elevation rotator needs to be as strong and powerful as the normal rotator used for the array. In the In Practice column of Ian White G3SEK in Rad Com December 1999 the use of a satellite TV antenna screw jack actuator as an elevation rotator is described.

The screw actuators are motor driven and have been designed to position satellite TV dishes and so are quite adequate for use with a satellite Yagi array. An actuator is shown in Fig 2. They are an arm whose length is varied by a motor driven jack screw. They have inbuilt limit switches. The use of one as an elevation rotator is shown in Fig 3. This is from a design by WA3USC with input from GM4JJJ and G4ZHI.

The frame is made from 1.5 inch steel angle. The horizontal cross boom is 2 inches in diameter. The cross boom rotates inside a length of larger tubing at least one foot long. The larger outer tube is fixed to the mast by U Bolts and a large plate. Washers are placed between the ends of the fixed tube and the frame and the frame is attached to the cross boom by U bolts. The actuator clamp is attached to a pivot bolt attached to a plate on the mast and the ball joint on the end is attached to a pivot point on the frame.

The angle of the frame to the mast is varied by adjusting the length of the actuator. The actuator drain hole should be at the bottom of the actuator housing. The actuator should also be arranged so that the actuator arm is in tension. Compressive forces could tend to bow the arm and this should be avoided. The system should be arranged so as to allow the array to be tilted over 90 degrees from the horizontal to vertical.

Ian White G3SEK has a web site at http://www.ifwtech.demon.co.uk/g3sek. This is referred to in Fig 3.

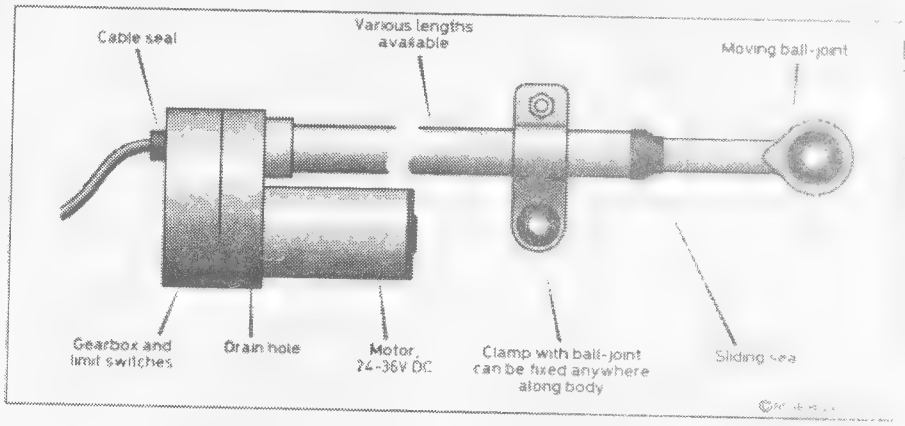

Fig 2 Typical Satellite TV Jack Screw Actuator.

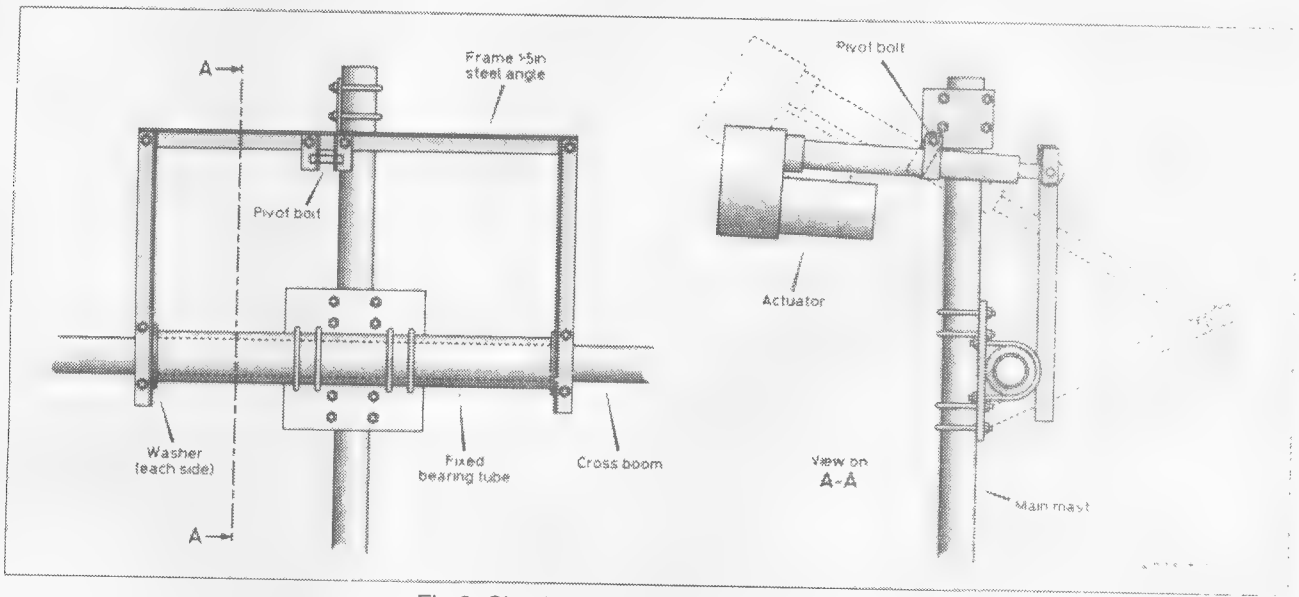

Fig 3. Simple Antenna Elevation System.

RF Probe

The RF probe from G3OKA (reprinted from Tech Topics Oct 99 Rad Com) in the January issue prompted Vic VK4AXM to provide the circuit of the probe he uses. Vic felt his circuit would provide less loading and better sensitivity. Vic felt that the coupling capacitor of 10n was too large and that the 4.7M resistor will reduce the output voltage.

The circuit is given in Fig 4. The RFC is a few turns on a toroidal core. The 1p8 coupling capacitor should enable light loading of the circuit being investigated.

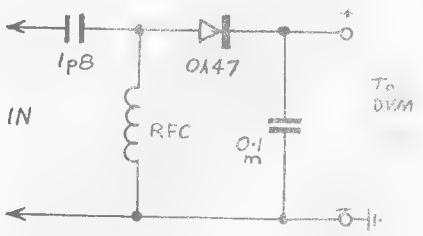

Fig 4. RF Probe.

NOVICE NOTES

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Please note that this is Peter's correct address.

Amateur Radio's hidden curriculum

Practical skills the study courses don't always teach

What you need to pass the exam and the practical skills required to be a successful amateur are two quite different things. This month we outline six vital skills for radio amateurs. Mastering them will assist you to fully enjoy amateur radio and further your electronics knowledge. In many cases, possession of these skills is what distinguishes newcomers from experienced hams.

Soldering

If anyone asked me what was the number one skill required for someone in electronics, I'd reply the ability to solder. Despite the availability of solderless connectors, people who can't solder are severely handicapped. Even if you use all store-bought equipment and antennas, sooner or later you'll need to re-solder a loose microphone or antenna connection.

The main alternative to soldering when making connections is crimping. Crimping has its advantages, but the decision to use crimped connectors should be made on a sounder basis than an inability to solder. Antenna and earth connections should always be well-soldered to reduce the risk of interference due to oxidised connections which can radiate harmonics even when the transmitter is clean.

A soldering iron of around 20 watts is satisfactory for most electronic work. The main exception to this is when soldering PL259 plugs onto coaxial cable, where a larger iron, variable temperature soldering station or butane torch will be found handy. Larger irons are also useful when soldering onto large metal surfaces, as would be required for some antenna work.

Successful soldering requires you to apply heat to the joint and then let the joint melt the solder. Soldered connections should be made quickly with a clean, hot tip to reduce the risk of overheating components. Putting solder onto the iron's tip, and then trying to let this solder drip onto the connection is not the right way to do it. Trying to economise by recycling solder from old valve TVs is also a no-no! Applying too much solder is also undesirable as it causes unwanted bridges to form between adjacent circuit board tracks or plug connections.

Further information on soldering is provided in the beginner's electronic books sold by the major components stockists.

Practical ability to use basic test instruments

All amateurs should be able to use a multimeter and an RF power/SWR meter. An ability to use and interpret readings from dip oscillators, impedance bridges, switched attenuators and noise bridges is essential to the antenna experimenter. Constructors of transmitters and receivers should be able to use RF signal generators, crystal calibrators, frequency counters, inductance and capacitance meters and (ideally) oscilloscopes.

With few exceptions, the above items can either be bought cheaply (eg multimeter) or constructed in a day or two (eg attenuators, dip oscillators, RF signal generators, noise bridges). Ample constructional information on test equipment will be found in back issues of *Amateur Radio*, the standard handbooks and the World Wide Web.

Construct a project from a schematic diagram and make intelligent substitutions

Studying for the exam teaches one how to identify components from a schematic diagram. Students should also have learned about the basic functions of each component, and the purpose of each component in common stages found in transmitters and receivers.

When it comes to making projects, many beginners are unconfident about tackling a project for which a printed circuit board layout is not provided. Yet, many of the most interesting projects (whether appearing in amateur magazines or on people's websites) lack a printed circuit board layout. This is generally because the builder uses alternative forms of construction (eg matrix board, 'ugly construction' and 'paddy board') that are cheaper, quicker and more easily modified than specially-etched printed circuit boards. Also, developing a reproducible circuit board layout requires time that in many cases experimenters would rather spend on developing the next project.

Being able to construct a project directly from the schematic diagram is one of the most important skills that the homebrewer can possess. This ability greatly the range of projects that can be built and makes it much easier to customise circuits to suit one's needs.

A good plan for most projects is to try to base circuit layout as much as possible on the schematic diagram. Have the low-level or input stages on the left-hand side of the board, and the high-level or output stages on the right part of the board. Build and test large projects in modular sections to assist fault-finding, modifications and upgrading.

Before cutting the circuit board to size, draw a plan showing the proposed mounting of components on the board.

There is nothing more frustrating than cutting a board, and finding that it's 2cm too short! More experienced constructors will have an idea of the size of board needed from a cursory glance at the schematic diagram, and may wish to proceed straight from gathering the parts to cutting the board without drawing a diagram.

Also very important is the ability to make intelligent substitutions, especially when building projects developed overseas. This is often not feasible with circuits using rare, special-function integrated circuits such as the MC3362 VHF FM receiver chip. However, substitutions are easier when circuits use discrete components. Constructors should have some idea of the function of each stage and the type of components that are used in it so that they have some idea of suitable substitutes.

As an example, let's take the keying stage in a low power CW transmitter. It may require an esoteric PNP transistor that is unavailable locally. Inspection of the circuit reveals that the stage is a transistor switch that applies voltage to the collector of the final output transistor when the key is held down. Depending on the current drawn by the final, a low to medium power PNP transistor is called for. As the keying stage is not handling RF, an audio transistor such as the BC640 or BD140 would be a workable substitute. Try the BC640 first, and if it gets too hot, substitute the higher power BD140.

Computer literacy

Computers now occupy an important place in most amateur shacks. Whether used as a terminal for digital modes, logging, designing antennas, morse practice, e-mail or running circuit simulation software, a computer will be found indispensable for many amateur activities.

However, a computer will only be useful if you're able to drive it. As a minimum, amateurs should possess the following computer skills:

- Ability to use an operating system such as MS Windows (including use of a mouse, minimising/ maximising windows, switching between applications, saving and retrieving files)
- Ability to use common Windows and DOS-based software
- Ability to send and receive e-mail messages
- Ability to read and post on newsgroups
- Ability to use an internet browser (including the use of search engines)

These general skills will serve well for most people. However, many specialist facets of amateur radio require additional computing abilities. Examples include:

- **Controlling equipment with computers.** Programming knowledge and the ability to construct proper interfaces between the computer's input/ output ports and the equipment to be controlled is required. Typical applications of computer control include repeaters, antenna rotators for satellite tracking, Morse CQ callers, etc. Microcontrollers (such as the BASIC Stamp) can also be used in many of these applications.
- **Modifying ex-commercial VHF/ UHF equipment.** Modern equipment uses programmable EPROMS instead of expensive crystals to set the operating frequency. Converting these sets requires an ability to program EPROMS to allow operation on amateur frequencies.
- **Creating an amateur radio webpage.** You will need to know how to write a webpage, use File Transfer Protocol (FTP) to transfer it to your service provider's machine and inform search engines of its existence. Knowledge of HyperText Mark-up Language (HTML) is a bonus, but not essential, given the large number of webpage editors around. If you want pictures on your page, you must know how to use a (computer) scanner and convert between different image file formats.
- **Circuit simulation, computer-aided drafting, satellite tracking, digital communication and logging.** To get your computer to perform these functions requires special software for each task. The 'user-friendliness' of such software varies enormously, from intuitive to hostile. See back issues of this magazine and various specialist internet mailing lists or newsgroups for user reports on various pieces of software.

Morse proficiency

Notwithstanding the proposed regulatory changes that will make Morse proficiency less important for amateur HF privileges, Morse remains a desirable skill. This is because it can be handy for identifying repeaters and beacons on VHF and its utility as an additional mode, especially when signals are weak. Also, Morse transmitters are much simpler and cheaper to build than transmitters for any other digital or voice mode.

Learners should aim to be competent in the following:

- At least 15 to 20 words per minute receiving speed
- An ability to receive Morse without needing to write it down, using paper only to note important details
- Being able to send off the top of one's head (ie not requiring a written message to send, as provided in the exam)
- A knowledge of commonly used on-air abbreviations

Almost all active Morse operators have the above mentioned skills. However, you will notice that the 5 and 10 words per minute Morse exams test none of these essential abilities. This means that these skills must be learned on air after the exam.

There is thus a large difference between the Morse taught to prepare people for the exam and the mode as used on the air by experienced operators. It is unfortunate that people frequently obtain a jaundiced view of the latter based on their experiences of the former. Morse at 5 wpm is indeed a slow, clumsy and tortuous mode. However, 20 wpm sent and received in one's head, with appropriate use of abbreviations, is many times faster and a fully practical mode for communications purposes.

Operating skills and general knowledge

Passing the regulations exam is a good start, but is not sufficient on its own. There are many skills that are best learned by listening to good operators on the air and reading the operating section of the ARRL Handbook. These topics have already been covered previously (October 1995, June 1996, August 1996), so won't be repeated here.

Have at least a vague idea of what's happening on the bands. This way you won't be caught unawares when asked to

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give a number for a contest that you didn't know about. Reading *Amateur Radio* each month and listening to your weekly divisional or club news transmission is usually sufficient.

Gain a broad knowledge of bandplans and the frequencies allocated to each licence class. This is so that you do not cause interference to other modes by operating in the wrong part of the band, or worse, breach your licence conditions by transmitting outside your allocations. All required information on these topics appears in the WIA 2000 Yearbook.

You may be asked questions on amateur activity and clubs in your area. Make it your business to familiarise yourself with local groups, on-air nets, coming hamfests and examiners near you. Most of the required information is provided in this magazine, the WIA Yearbook, on-air WIA/club news bulletins and what you yourself hear on the air.

These days most repeaters channels are referred to by the last four digits of their output frequency. Thus a 2 metre repeater transmitting on 146.700 MHz is 6700 and a seventy centimetre repeater transmitting on 438.525 MHz is 8525. In the early days of channelised two metre FM operation, Australian amateurs used several different channel numbering conventions. You still hear old timers refer to frequencies by their old channel number. Possibly the most common is 'Channel 50' - 146.500 MHz - the national simplex calling frequency. As to repeater frequencies, 146.650 MHz was known as Channel 1, progressing upwards until Channel 15 on 147.350 MHz.

Also worth knowing is your grid locater square. Knowing your square to four characters is acceptable to give out in contests, but if there is a need to calculate distances, knowing all six characters will be necessary. Grid squares are seldom used on HF SSB or VHF FM, but are commonly used by VHF and UHF SSB operators.

Conclusion

Passing the amateur exam is a great start, but is only the beginning. Learning several of the practical skills mentioned above will assist you to become an experienced amateur better equipped to enjoy what amateur radio has to offer.

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EDUCATION

Brenda M Edmonds, VK3KT
PO Box 445, BLACKBURN 3130

An AGM is more than hot air

In May the Annual General meeting or Annual Convention of the Federal WIA will be held. This is the one time in the year when representatives of each WIA Division come together as the Federal Council to discuss the running of the WIA and to formulate policy. Members will be aware that for some years the Federal Council met three or four times annually. This practice was discontinued recently in the interest of saving costs.

Part of the program for the AGM is set by the rules under which the WIA is incorporated. An AGM is necessary in order to receive the financial and auditor's reports, and reports from Directors and Co-ordinators.

In addition, time is given to discussing matters raised by the various Divisions. This section has been reduced of late as much of the business of the WIA has been conducted by mail or e-mail, and motions have been voted on in this way. A discussion in a General Meeting often allows more points of view to be aired and related matters raised, than are possible by mail or electronic means.

Divisional representation

Members will be aware that ideas and proposals can only reach the AGM by way of the Divisions. If you have a point to raise, you present it to your Division which will then debate it and decide whether or not it should be taken to an WIA AGM. In some cases it may not be taken, either because it conflicts with established policy, because it is in conflict with the Articles of Association of the WIA or because it has been recently debated. If the Division decides to act on your suggestion, it will be presented to the AGM as a formal Motion which, to be passed, must be voted for by a majority of Council - that is four or more of the seven Councillors.

Over the years the situation of each Division having one vote has been raised on a number of occasions, and it is expected to surface again this year. The problem is that each Councillor represents the members of his/her Division, but the number of members per Division varies greatly.

International AR

Another item, which will have a high priority this year, is the planning for the IARU Region III Meeting to be held in Darwin later this year. This meeting which is held every three years has not been in Australia for many years. It is the forum by which the individual countries can present their views to the IARU which, in turn, can carry those views to the International Telecommunications Union. It is the ITU which formulates the rulings controlling all forms of radio operation throughout the world.

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UoSat-14 Returns to Amateur Radio Service

On February 24, Chris Jackson reported via the AMSAT bulletin board that he had turned UO-14 back into "amateur radio mode".

To quote Chris:

UO-14 was launched in January 1990 and spent its first 18 months in orbit operating as an amateur store and forward satellite prior to the launch of UO-22. It was then switched for use by VITA (Volunteers In Technical Assistance) who used it for messaging into Africa. Since the computer which is used for store and forward communications is no longer able to perform that task, UO-14 is no longer usable in this mode. It is however possible to use the satellite as a single channel FM voice repeater, and I have just configured the satellite to do this. The uplink is 145.975, and the downlink is 435.070. I will leave the satellite running in this mode for the next few weeks. If it is useful, then I will probably leave it running - if it isn't used, it will be switched to transmitting telemetry.

Happy 10th birthday UO-14!

Thank you Chris, the return of UO-14 has been welcomed by stations around the world from the first day. Its return to service gives the amateur radio satellite fraternity another great asset, particularly those operators with limited resources. It is definitely one of the "easy-sats" and is operating as a single channel, full duplex, FM repeater. If you have full duplex facility you can hear your own voice as you speak. While this is an advantage, it is not absolutely necessary, as long as you adhere to sensible operating practices. I've worked several amateurs who were using hand-held transceivers. For VK/ZL stations UO-14 has advantages over AO-27 and SO-35. AO-27 is only switched on in the northern hemisphere and SO-35 is only switched on at weekends and then, not always over VK/ZL. There is a strong possibility that UO-14 will be switched into FM repeater mode permanently in which case it will be available for at least four and up to six passes each day.

Operating tips:

* **Listen carefully before transmitting.**

  You should be sure to get a full quieting signal from the satellite before you transmit. Even then, PLEASE be patient and wait for a clear channel.

* **Do NOT sit chatting on the uplink frequency** with another local waiting for the satellite to rise. You may be getting into the

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National co-ordinator:

Graham Ratcliff VK5AGR
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AMSAT Australia net:

The AMSAT-Australia net meets formally on the second Sunday evening of the month. During the winter months in South Australia (end of March until the end of October) the net meets on 3.685 MHz +/- QRM with an official start time 1000UTC with early check-ins at 0945UTC. During the summer months when daylight saving is in operation in South Australia (end of October until end of March) the net meets on 7.068 MHz +/- QRM with an official start time of 0900UTC with early check-ins at 0845UTC. The times and frequencies have been chosen as the best compromise for an Australia-wide net taking into consideration seasonal propagation changes and the various state summer time variations.

AMSAT Australia newsletter and software service:

The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

Keplerian Elements.

Current keps are available from the internet by accessing the AMSAT FTP site, ftp.amsat.org and following the sub-directories to "KEPS".

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satellite even though you are not receiving it. The often severe QRM we hear when the satellites are low in our northern sky is testimony to this.

* **Listen to one or two passes first** to familiarise yourself with operating practices. If at all possible, monitor the downlink while you are transmitting. Stations are often heard repeatedly calling over other contacts. They are obviously not hearing the downlink all that well, if at all. This is where full-duplex is a great advantage.
* **Remember ... UO-14 is a single-channel device.** If a contact is in progress wait at least for a break to announce your callsign.
* **Because of the antenna radiation patterns** both at your end and on the satellite there will be times when basically equipped stations will find it hard to be heard, even if the input is clear. This is just a fact of life.
* **Don't despair.** You have two possible courses of action. Be very patient and wait until a more favourable time, or improve your station.
* **Get the downlink right first.** A simple outdoor antenna such as a turnstile or a ground plane will be a vast improvement over (say), a rubber-duckie.
* **Last but not least.** The above tips hold good for all satellite operation but are particu larly relevent to UO-14 and SO-35.

International Space Station (ISS) News

NASA recently announced that the first ISS expeditionz crew and its backup crew have received training on the use of the initial U.S. provided Amateur

Radio station on board ISS. The equipment will be installed as part of the ARISS (Amateur Radio aboard the International Space Station) effort. The training session was conducted at the Gagarin Cosmonaut Training Centre in Russia. As part of the ARISS training effort, NASA's Matt Bordelon, KC5BTL, has prepared a consolidated schedule for training in the United States and Russia that will include familiarisation with equipment, packet radio theory and hands-on simulation. The ARRL reports that the training will focus on general principles of ham radio as well as preparations to use station equipment-operating modes, including software.

Bordelon has held an initial training session with astronauts and cosmonauts that provided exposure to the actual hardware. Other training has included information required to obtain an Amateur Radio licence. The first ISS crew will include Bill Shepherd, KD5GSL and Sergei Krikalev, U5MIR.

UoSat-22 turns "Upside-Down"!

Chris Jackson, G7UPN, reports that UO-22 has entered a period when it will be orbiting in full sunlight. The temperatures of some critical areas of the satellite have increased considerably. Controllers have turned UO-22 upside down to point the critical systems to cold space. This has reduced the temperature on various systems (such as the batteries) by between 5 and 10 degrees. An unfortunate by-product is that the downlink is now weaker than normal. It has been quite workable though and at times it seems to be just as strong as ever. The radiation pattern of the UoSats is purposely designed to favour stations at the edge of the satellite footprints. These stations will be farthest away and therefore benefit most from the increased signal. This situation is of course upset completely by the satellite being "upside-down". The satellite will remain in full sunlight until late March, when controllers will turn it back 'over' again. According to Chris *"over the next few years this situation will become worse as the no-eclipse periods become longer."* The satellite telemetry is carrying the message that only the 145.900 MHz receiver is available for communications at present.

Why are Eclipses (or lack of them) so important to Satellite Operations?

Most of our amateur radio satellites orbit the Earth in fairly low orbits. This means they can be shaded from the Sun when on the dark side of the Earth. They experience alternate periods of daylight and periods of darkness. If however, the situation arises that the plane of the orbit of a particular satellite is at right angles to the direction of the Sun, that satellite will be orbiting in full sunlight for all of every orbit and never experience any time in the dark. This could be beneficial for the power budget if the satellite is designed to take advantage of this situation but if it has simply drifted into that position over time it can be very harmful. The satellite can become dangerously over-heated. This is the situation with UO-22 at present. The opposite has been happening lately with KO-23. It has had battery problems and would benefit from more rather than less sunlight. It has been shut down several times by the control station in the past two years due to lack of sufficient sunlight. Why don't we do something about this? Well ... as much as can be done, is done. Since these low-earth-orbit satellites do not carry any propulsion motors or fuel they cannot be manouvered once in orbit. Their attitude can be changed, usually by using electro-magnets working against the Earth's magnetic field. This was the case with UO-22. Whilst the (pointing) attitude of the satellite can be changed, the shape or position of the orbit cannot be changed. We would have to pay lots of money to include orbit adjustment propulsion and more again for the upkeep of control stations to monitor and adjust the orbits. Our funds are simply nowhere near large enough for that kind of operation.

Have You Observed OCS?

If you have a satellite track prediction program, have a look for the American Naval Academy's Optical Calibration Sphere (OCS) in the evening or early morning sky. At the time of writing it has been sighted as a moving "pin-point" of light in the western sky on some clear evenings. It is unusual to be able to see satellites low in the western sky shortly after sunset (or in the east shortly before dawn). We are looking at the unlit side of such satellites under these conditions. Even MIR and ISS are difficult to observe under those circumstances. OCS is different in that it is spherical and highly reflective so some part of its surface will always be reflecting the sunlight. Keps for OCS have been included in the standard 'amateur' set from NASA for some time now.

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AWARDS

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DXCC QSL card checking.

Information via Gwen, VK3DYL. The ARRL DXCC Desk says that effective April 1 2000, DXCC members may have their cards checked by local card checkers, without having to mail cards to ARRL Headquarters. Under the new programme. This will apply to all awards except 160 Metre DXCC and all QSLs from any current DXCC entity, and includes both new awards and endorsements.

QSOs made up to 10 years prior will be eligible for field checking, while older cards and those from deleted entities still may be sent to ARRL HQ. The current DXCC Field Checking programme ended March 31, 2000. Reappointment of DXCC Card Checkers under the new criteria will be necessary. For further information contact Bill Moore, NC1L, dxcc@arrl.org;

As this obviously concerns operators who are members of ARRL, those wishing to be appointed Card Checkers would also need to be members.

New Zealand — Nzart Series.

General requirements : GCR accepted under usual conditions. Contacts must have been made after Nov 1, 1945. Special endorsements available for single-band or mode . The fees for all awards are US$2.00, except WAP, which is $3.00. For overseas airmail, addUS$1.00. Send all applications to :

NZART PO Box 108 Gisborne 3815 NZ

Captain James Cook Award.

This award keeps alive the memory of this world famous navigator and seaman. Issued in three classes : Sailor Class requires contacts with a G in Yorkshire, FO, ZL2, VK2 and KH6. Officer Class needs those as for Sailor Class plus ZL1, ZL3, ZL4, VK3, VK4, VK9 or P29., and any Antarctic station. Command Class needs all the preceding plus any 5 of the following - VE2, VO, A35, YJ8, FK8, CE0 and KL7.

IARU Region III Award.

Contact stations in member countries after Apr. 5, 1982. The basic award requires 7 countries, and Silver Star and Gold Star endorsements are available for 15 and 20 contacts respectively. Eligible countries are : Australia, Brunei, Bangladesh, China (PRC), Fiji, French Polynesia (FO8), Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga and Vanuatu. Plus one country credit from U.S. Territories in the Pacific. - Guam, Nthn Marianas, American Samoa, Wake Island, Baker-Howland Group, as represented by the ARRL, and one country credit from Pitcairn Island or Chagos , represented by the RSGB.

New Zealand Award.

Available to all except ZL amateurs. 101 contacts are needed to qualify. - 35 ZL1 stns, 35 ZL2 stations, 20 ZL3 stations, 10 ZL4 stations, plus one contact with a ZL "territory" (either Antarctica, Chatham Islands, or Campbell Island, or even Kermadec Islands. Contacts after Dec. 8, 1945.

New Zealand Counties Award.

Basic level award issued for contact with 20 NZ Counties. Endorsements for 40, 60, 80, and 100 , with a special certificate for all 112. Checking sheets must be used, and are returned to the applicant. A special "224" shield was instituted to recognize outstanding achievement, that of double 112 with different stations the second time around. Current cost is $11.00 and overseas stations add $2.00 for postage. Applicants for NZ224 must first hold NZC112 award. The operator of a "County Dxpedition" may claim that County for his own NZC credit. Note : overseas applicants - extra $4 for airmail postage on 224 plaque, or $2 for surface postage.

Worked All Pacific Award.

Contact 30 different countries of Oceania, as specified in the current DXCC listings.

Where's DX ?

3B6 Agalega Island - Preparations for a 16 day operation in October continue to be on schedule. Further information on Web page - http:// www.agalega2000.ch

160 Metres - Effective Apr 1, JA stations will be able to use 1810-1825 kHz, in addition to their current privileges on 1907.5 - 1912.5 kHz.

FH Mayotte - Christian, 6W1QV plans to be active from here for at least 5 months. Qsl is via F5OGL, call book address.

Congo/Alaska. - Hazel, TN7OT has returned to Alaska, and offers a new Qsl address. — Hazel Schofield, 35765 Ryan Lane, Soldotna, Alaska 99669.

SY2 Mount Athos. - Monk Apollo has applied for, and received special callsign SY2A, to celebrate his tenth anniversary of activity on the bands as the only licensed operator on Mount Athos.

VK9CQ Cocos-Keeling Islands, and *VK9XV Christmas Island* will be activated during August and September.

XW Laos. - Hiroo, JA2EZD will again be using callsign XW2A from Vientiane, until May 5.

FR/T Tromelin Island. - The Lyon DX group is proud to announce a Dxpedition around August or September.

VK0 Antarctica - Listen for Lance, VK0ERZ from Davis Base around 1200Z on 14255 kHz. Qsl via VK2FUN.

TX0DX Chesterfield Island. - The DXAC has been asked to review charts of the area to determine whether this possible new entity meets the distance requirement to qualify as a new one.

Prince Edward & Marion Island ZS8 - The operator Derek, is Qrv as ZS8D until May 2000. Listen for him on 14260 kHz.

The top 10 most needed entities, according to a number of reliable sources are:

1. P5 North Korea
2. VU4 Andaman Is.
3. A5 Bhutan
4. BS7 Scarborough Reef
5. 7O Yemen
6. 3Y/B Bouvet
7. VU7 Lakshadweep
8. VK0 Heard Island
9. VP8 South Sandwich Is.
10. 3C Equatorial Guinea.

Good luck, and good hunting,
73 de John, VK3DP

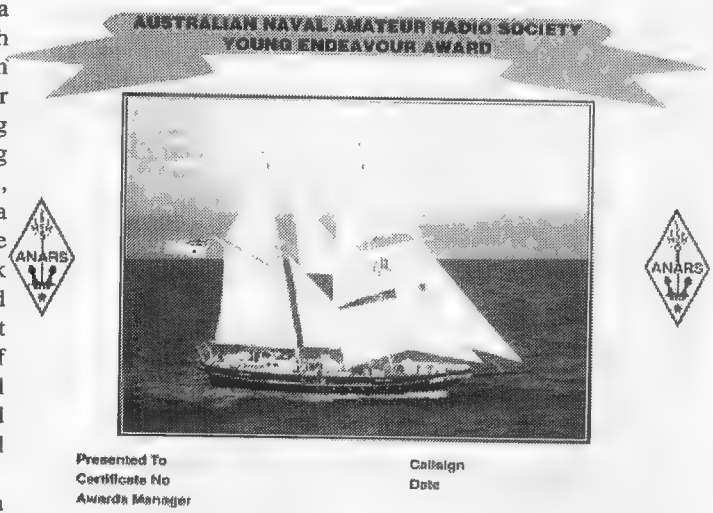
Australian Naval Amateur Radio Society

Young Endeavour Award

Young Endeavour left England on 3 August 1987 on her 21,000km maiden voyage to Australia to be presented to the Australian people on 26 January 1988 as a 200th birthday gift from Great Britain. Seven thousand young Australians applied to be part of the crew for this historic voyage but only 12 were selected. The other twelve were young British volunteers. All told, twelve male and twelve female young people undertook the three month voyage to the Antipodes under the command of Captain Chris Blake, one of the few English masters to hold a masters ticket for square rigged vessels. Long before she set sail, Young Endeavour had become symbolic of the two centuries of Australia's and Britain's entwined history.

The $3.7 million barquentine started life in May 1986 in Lowestoft, Suffolk, where she was built by Brooke Yachts – she was originally planned as a schooner but was specially modified for the bicentennial journey. Her designer, Colin Moodie of Britain, is one of the world's most experienced yacht designers. The man behind the project was Arthur Weller, Chairman of the Britain-Australia Bicentennial Schooner Trust, a body set up to design, build, raise funds for and deliver the vessel. Half the cost was provided by the British Government and half by the people of Britain.

Young Endeavour is 44 metres long and is capable of 14 knots under full sail. Twin-masted with nine sails rigged fore and aft, she has square sails on her foremast. The masts are more than 30 metres high and under them lie a gold British sovereign and an Australian dollar coin in keeping with sailing tradition. The hull, painted "Britannia Blue", is steel. The main deck is teak and the transom and nameplate depict wild flowers of each State as well as the United Kingdom's national flowers.



She resembles a 19th century sailing ship and conjures up images of that transportation era but she has many hidden extras. Two diesel engines for port maneuverability, a watch and chartroom fitted with complex instruments including GMDSS facilities and a state of the art radio room. A dry store, deep freezers and four water tanks all sit below decks along with a reverse osmosis plant. There is also a small laboratory area for oceanographic experiments, a donated library of 1,000 books and films. There is a twelve berth cabin for the male crew members and two six berth cabins for the girls. Most importantly, there is a mess for the 24 volunteers and a galley. The six Royal Australian Navy crew, including the skipper, use the same galley, but eat in the wardroom locally referred to as the cafe bar. On 2 June 1987 in the port town of Lowestoft, Suffolk, the Duchess of Kent officially named the vessel and early in July she was a special salutation for Her Majesty the Queen. When the vessel left Cowes on the Isle of Wight on her maiden voyage, she was given a 21 gun salute in the presence of His Royal Highness Prince Philip.

Young Endeavour is a unique and special vessel and the Australian Naval Amateur Radio Society is Proud to have been granted permission to feature this very beautiful Tall Ship on its Award Certificate and QSL card. The Society's web site has photographs of the vessel as well as information about the Society.

http://www.zip.com.au/~sb/anars

Award Information

This award is open to all amateur radio operators and short wave listeners. Applicants are required to work 4 of the Society's 7 club callsigns. Contacts from 1 July 1993 will qualify for the award.

The club callsigns are VK1SEA, VK2SEA, VK3SEA, VK5SEA, VK6SEA, VK7SEA and ZL1SEA. They can be worked home based, portable or mobile (aeronautical, marine or land) for the purpose of contact. Contacts are to be on the high frequency bands only and any mode may be used.

The cost of the award is $5 AUS for VK applicants and $5US for all other applicants. Qsl cards are not required but a log extract must accompany each application, which is to be sent to: -

Award Manager VK2CE
PO Box 300,
Merimbula 2548
Australia.

The best chance of making the necessary contacts is on the Society's HF nets which are held as follows: -

SSB

Wednesdays

3.620 MHz 0930 Zulu VK 80 metre net
3.620 MHz 0800 Zulu ZL 80 metre net
(0700 Zulu during NZ daylight saving)

Monday to Saturday

7.075 MHz 0400 Zulu VK 40 metre net

Daily

14.275 MHz 0430 Zulu VK 20 metre net
CW net Monday night on 3.532 MHz at 0930 Zulu.

Skeds can be set up with any of the club callsigns via the following email addresses:-
vk1sea@qsl.net, vk2sea@qsl.net, vk3sea@qsl.net, vk5sea@qsl.net, vk6sea@qsl.net, vk7sea@qsl.net, zl1sea@qsl.net

GOOD LUCK Enquiries about the award to:anars@asitis.net.au. Fax: if outside Australia - 61 2 64 950 189

CONTESTS

Ian Godsil VK3DID,
57 Nepean Highway, Aspendale, 3195
Phone:0408-123-557
E-mail: <contests@wia.org.au>

Contest Calendar

April — June, 2000

Apr	1/2	SP DX Contest	(CW/Phone)	(Mar 99)
Apr	7/9	JA DX CW Contest	(High Band)	(Dec 99)
Apr	8/9	King of Spain DX Contest	(CW/Phone)	
Apr	15/16	Holyland DX Contest	(CW/Phone)	(Mar 99)
Apr	22/23	Helvetia DX Contest	(CW/Phone)	(Mar 99)
Apr	22/23	SP RTTY Contest		(Mar 99)
Apr	25	Harry Angel Sprint	(CW/SSB)	(Mar 00)
May	6/7	ARI International DX Contest	(CW/SSB/RTTY)	
May	6/7	Ten-Ten Int. QSO Party	(CW/RTTY)	
May	13/14	Volta RTTY WW Contest		
May	13/14	CQ-M Int. DX Contest	(CW/SSB/SSTV)	(Apr 00)
May	13/14	Sangster Shield NZART	(CW)	(Apr 00)
May	27/28	CQ WW WPX Contest	(CW)	(Mar 00)
Jun	3	IARU region 1 Field Day	(CW)	
Jun	4	Portugal Day Contest	(SSB)	
Jun	10	QRP Day Contest	(CW)	(Apr 00)
Jun	10/11	ANARTS WW RTTY Contest		(Apr 00)
Jun	10	Asia-Pacific Sprint		
Jun	10/11	South America WW Contest	(CW)	
Jun	17/18	VK Novice Contest	(CW/Phone)	(May 00)
Jun	17/18	All Asia DX Contest	(CW)	
Jun	24/25	ARRL Field Day		
Jun	24/25	Marconi Memorial Contest HF	(CW)	

Thanks this month to VK4TI WIAQ NZART

Note: It is with great sadness that I report the death in early February of Ron ZL2TT.
Ron was an avid Contestant and would have been well known to many of us VKs. Ron was the contest co-ordinator for NZART and in that capacity I enjoyed my contacts with him He will be sadly missed on the bands and our condolences are extended to his family.

Vale Ron.

Further to my note last month about the RD Contest, I was very pleased indeed to receive a letter from Roy Mahoney VK4BAY on the subject. Roy made some quite valid comments and I thank him most sincerely for them.

Apologies for two errors in February

1. There were some inaccuracies in the VK/ZL/Oceania Results published in February. I thought that I was doing a great stroke in getting these out quickly, but I WAS WRONG. There are results missing, so again I ask you all to accept my apologies. Hopefully they will all be sorted out by next month, when I shall try to highlight some information about this annual contest.

2. A correction to the CQ WW WPX CONTEST (SSB 25 - 26 March CW 27 - 28 May).

   In the section SCORE, the last line should read: *"QSOs with stations in the same country are permitted for multiplier credit and have one point value."* VKs may work VKs.

Meanwhile, remember that the contesting season is almost upon us, so please get your station working well and let's hear from you in some contests.

73 and good contesting

Ian Godsil VK3DID

Result Helvetia Cont

(Call\cat\mode\score)
VK4ICU SOP CW 438

continued next page

QRP Day Contest 2000

0700z -1200z Sat 10 June

Open to all CW operators

Object is to work as many stations as possible.

Category: Single Operator only.

Sections: (i) VK, ZL, P29 (ii) outside the above call areas.

Mode: CW only.

Bands: all HF bands (no WARC).

Exchange: RST plus serial number beginning at 001 and incrementing by one for each contact.

Repeat contacts on same band: In order to make greater use of available band space and time, repeat contacts with the same station will be allowed with a minimum of two (2) hours between contacts.

Scoring: the object is to score as many points as possible in your section.

Stations within VK/ZL/P29 score as follows —

VK/ZL/P29 contacts	1 point
Outside VK/ZL/P29	3 points

Stations outside VK/ZL/P29 score as follows —

VK/ZL/P29 contacts	3 points
Outside VK/ZL/P29	1 point

All contacts made with a homebrew transmitter or transceiver score double points.

Final Score is the sum of the total QSO points. Except for the use of homebrew equipment (see above), no multipliers apply.

Certificates: Certificates will be awarded to the following — (i) the first three placegetters in each section, (ii) the top scorer on each band (if the entrant is not already a placegetter).

General: any station claiming to operate QRP MUST NOT exceed a maximum of five watts carrier to the antenna and should add /QRP after its callsign.

Logs showing contacts and points claimed, together with a full description of equipment used, should be sent to —

Ron Everingham VK4EV,
30 Hunter Street,
Everton Park, Queensland, 4053,
no later than 7 July, 2000.

See: http://www.users.on.net/zietz/qrp/club.htm

Sangster Shield Nzart

0800z - 1100z

Sat 13 May - Sun 14 May

Object is to contact as many ZLs as possible. All power levels permitted, but serious competitors for the Sangster Shield must not exceed five watts o/p.

Band: 80 m.

Category: Single Operator.

Mode: CW only. **REPEAT CONTACTS** may be made each half hour, with at least five minutes between repeats with the same station.

Exchange: RST plus serial number beginning at 001. ZLs will send RST, branch number and power (eg 569/11/04).

Score ten points for VK QRP to ZL QRP; five points for VK QRP to ZL QRO; five points for VK QRO to ZL QRP.

Final score is total QSO points X number of branches worked.

Send logs showing QSO details, points claimed, name and address of operator and power level to:

Alan Hughes ZL3KR,
4 Exton Street,
Christchurch 8005, NZ,
before 15 June, 2000.

CQ-M DX Contest

2100z -2100z

Sat 8 May - Sun 9 May

Bands: all HF bands and satellites (no WARC). Modes: CW; SSB; SSTV.

Categories: Single operator single band CW only, SSB only, Mixed, satellites, SSTV. S/O multi-band CW, SSB, Mixed, satellites, QRP, SSTV. Multi-operator: multi-band, single Tx, mixed, SSTV. SWL: multi-band, mixed.

Exchange RS(T/V) and serial number beginning at 001.

Score one point with own P-150-C country; three points for QSO with another continent. SWLs score one point for log of one station; three points for complete QSO.

Multipliers: each country in P-150-C list counts as a multiplier once only per band. SWLs have no multipliers.

Final score is total QSO points X sum of all multipliers. Various **awards** will be available.

Send logs by mail to: CQ-M Contest Committee,

Krenkel Central Radio Club of Russia,
PO Box 88,
Moscow, Russia,
by 1 July.

Logs may be sent by e-mail as ASCII text to: <cqm99@mai.ru>

For details of P-150-C list see http://www.mai.ru/~crc/crc_e/award/r150s_e.htm

ar

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SPOTLIGHT on SWLing

by Robin L. Harwood VK7RH
5 Helen Street, Newstead Tasmania 7250
(03) 6344 2324
E-mail: robroy@tassie.net.au

Oh, to be on *Short Wave*, now that April's here

April has arrived and reception conditions have significantly altered over Short Wave, with signals coming in the daytime as winter propagation takes over, particularly on the lower frequencies.

The BBC World Service has introduced up to eight streams, replacing the three streams, which formerly targeted Europe, Africa and North America. I do not have the frequencies for Australasia but believe that the idea is for News and Current Affairs to be aired at convenient times for listeners in this region.

It will be confusing because other streams will be heard easily and it is going to be difficult ascertaining what streams are being aired and on what frequency. I am anticipating that each stream will be for a few hours and not a continuous 24-hour broadcast.

However tuning on to other streams should allow the listener to become updated with significant news developments. The satellite feed to various domestic stations worldwide will probably be a mix of the various streams.

Other international broadcasters have also made some organizational changes. The "Voice of America" has downgraded some language blocks and also has instituted some personnel changes. The 24-hour programme "News Now" is still being broadcast, although with some minor format alterations.

Fewer Short Wave users

Deutsche Welle in Cologne also has made some further language rationalization but still is broadcasting in English. Audience research has indicated that there has been a significant drop in the number of individuals using short wave in Europe and North America.

Programme placement over domestic networks is still being attempted but it is clear that editorial control has reduced or altered some programme content.

Research has also shown that there are regions where Short Wave is likely to be a primary source for news from the outside World, because domestic media is poor and coverage often non-existent.

Short Wave in Africa

The areas most affected by this are clearly in Africa and Asia. Internet access has grown significantly in Europe, North America, Japan, Australasia and South America. However, Africa and Asia (outside of China) are well behind Internet developments. Although South Africa is on the Web, Internet penetration is sparse throughout that Continent.

The Internet can fall over and be offline for some time. Internet access can be stopped by governments or through sheer inefficiency. Penetration is poor as we have seen and to reach audiences in these areas, shortwave broadcasting will continue, using existing analogue technology as the economic cost for both digital broadcasting and receiving equipment will be beyond reach of many in the regions.

Webcasting

And while we are on Internet broadcasting, Radio Netherlands is trying a special webcast just a few days after the deadline for this month's column. The timing is not good for us here in Australia yet is ideal for those in Europe and North America where most of the Internet usage is at present. However, the numbers of listeners would not be above five to ten thousand who can simultaneously access the webcast. Webcasting permits smaller interest groups to air their points of view. Net congestion and bandwidth are going to be the sticking point to further development of this new medium.

A Bill was introduced into the Australian parliament to permit international broadcasters to have facilities to use Australian sites to broadcast outside of this nation.

The Bill was referred to a committee in the Senate to consider the ramifications of this proposed legislation. This Bill would only apply to non-Australian broadcasters, as the existing networks are not covered.

One organization that is keenly interested in establishing a shortwave station is HCJB - the evangelical broadcaster_presently based in Ecuador. They have a potential site in NW Western Australia. However it is believed that this legislation may really be about the disused Darwin facility which has been inactive for a number of years. Several international stations have been keenly interested in utilizing it but are awaiting the outcome of this legislative hurdle.

The Belgian International service, "Radio Vlandereen International", is commencing an English service to Australia on 9865 kHz at 1200 UTC. It is from the Petropavlosk facility on Kamchatka Island, just off the Siberian coast and due north from Japan. The programme is for half an hour. A parallel service to SE Asia is on 17690 kHz from Tashkent, Uzbekistan.

Well that is all for this month and if you do have any information for this column, you can send it to me via rharwood@primus.com.au or tai_501@hotmail.com.

The postal address is at the top of this column.

73- Robin L. Harwood VK7RH

VHF UHF AN EXPANDING WORLD

David K Minchin VK5KK
Postal: PO Box 789 Salisbury South Australia 5108
E-mail:tecknolt@arcom.com.au
Web page: http://www.ozemail.com.au/~tecknolt
Fax +61 8 82346396
Phone 0414 808060 (before 2130 EST please)
All times are UTC

Important. All amateurs read this now

There has been a significant amount of press, emails and comment in general regarding changes to our allocations above 50 MHz. Two bands are effected, immediately, but I am aware of concerns for another two UHF bands that may seriously effect more amateurs.

The following has been extracted from the ACA's Website and summarises the immediate changes to two microwave amateur allocations removing access to up to 198 MHz of bandwidth in some areas.

Radiocommunications Licence Conditions (Amateur Licence) Amendment Determination 2000 (No. 1) was notified in the Commonwealth of Australia Gazette on 7 February 2000. This amendment deletes the frequency band 2302 – 2400 MHz from the permitted frequency schedules for Amateur Unrestricted, Amateur Limited and Amateur Intermediate stations. This spectrum has been designated, by the Minister for Communications, Information Technology and the Arts, to be allocated by issuing spectrum licences.

The amendment also deletes the frequency bands 3.425 – 3.4425 GHz and 3.475 – 3.4925 GHz from the permitted frequency schedules for Amateur Unrestricted, Amateur Limited and Amateur Intermediate stations in certain parts of Australia. In addition, the frequency bands 3.4425 – 3.475 GHz and 3.5425 – 3.575 GHz have been deleted from the permitted frequency schedules for Amateur Unrestricted, Amateur Limited and Amateur Intermediate stations in certain other parts of Australia.

The affected areas of Australia are detailed in two new Schedules (8 and 9) in the LCD. These specified segments of the 3.4 GHz band are in the process of being declared, by the Minister for Communications, Information Technology and the Arts, for re-allocation by issuing spectrum licences. ... ACA

The current WIA bandplans are now in review, with proposed narrowband segments at 2403 MHz and 3410 MHz. This is open to public comment; please forward any comment to either John Martin VK3KWA the Federal FTAC officer or myself.

We have just seen collective bids for the 1.8 GHz Mobile Phone band Auction reach past $1.3B. The 3.4 Ghz part of the Spectrum is up for Auction in May 2000. While the Australian Communications Authority originally envisaged the spectrum to be reallocated for wireless local loops (WLL) for private operators to compete with Telstra's land-based local call network, it is now envisaged that this spectrum will be more useful for high-speed Internet services, including video streaming. At least two Groups are already showing interest in 3.4 Ghz, Austar and the Seven Network for uses other than WLL. Both are now proposing, high-quality broadband Internet services as an alternative to the current cable/optic networks. And with this spectrum, Seven could feed two Olympic channels and a number Pay TV channels to in major capitals without relying on Telstra.

If you live within the Sydney environs then you would be aware of the current restrictions to the 421 – 432 MHz part of the 70cm band, within a 150km radius of the Olympic site until December the 31st, 2000. All indications from the ACA, to date, have shown no change to this particular "Amendment Determination". Infact, it is actually gazetted that equipment from the Olympic system shall not be resold within Australia. But now information has come to light regarding the consideration of the 420 – 430 MHz section in Western Australia for use in a Police Radio network using technology that looks similar to what is being used on the other side of the country. Hmmm, I hope my thinking is wrong!

While we either share or have secondary access to many of our bands above 50 MHz, one saving grace in many countries is the co allocation with military users. This has kept large parts of our 70cm band away from the very obvious threats from commercial users from both ends. Indeed if you do a reality check we are more than lucky to have 30 MHz of real estate right plum in the middle of a Commercial segment.

But now things may change. The proposed Airborne Warning System (AWAK's) is considering a slice of spectrum around 1270 MHz for radar operation. This poses a threat to our current 1240 – 1300 MHz allocation. However, some would be aware, the 23-cm band has shared with radar systems before, i.e. the old airport radar systems centred on 1275 & 1305 MHz many years ago. More than reasonable fear is now surfacing that the military may be prepared to trade-off lesser used parts of the spectrum in order to gain a new allocation. This could be, in part, the shared section on our 420 – 450 MHz band. Again, I hope I am wrong!

On the otherside of the coin we seem to have a bit of protection on allocations where we share with ISM / Unlicensed services, i.e. 2400 – 2450 MHz and parts of the 5650 – 5850 MHz band. This is mainly because it would be hard to put a higher service amongst a large number of unlicensed and uncontrollable transmitters. Interestingly, we do have some clout in these segments against unlicensed or class licenses, as we are indeed licensed "higher" up the list. At least two 2.4 GHz interference cases have been settled in our favour by the ACA and the Clearwire Technologies vs ARRL 2.4 GHz case in the USA, recently, also went in our favour.

What do we do?

Unfortunately some parts of our spectrum will (and already have) fallen victim to commercial interests. We do not have any clout in the scale of finance behind these changes. The entire WIA's assets may only afford about 20 kHz at current rates, yet only a handful would benefit. And we still wouldn't have enough spectrum for a FM channel! Take two steps back and parallel our bands to another plight of the last 20 years .. preservation of land as national parks. Much different is it?? NO! This direction is now being pursued in the US to preserve tracks of spectrum for amateur use either as primary or secondary allocations. Whole bands are not being targeted but realistic sections that will cater for expected amateur growth.

While our use of the target bands is limited, it is increasing, as surplus commercial equipment becomes available. For example, the availability of Qualcomm Sat gear has doubled the 10 Ghz population both here and in the US. It would be ironical if that in five years we have access to volumes of currently installed equipment, as surplus, but have no adjacent allocation to use the equipment!

Consider the National park notion and lobby your local division, we must act now.

50 MHz Continues....

The number of F2 50 MHz openings dropped through mid to late February, in line with the drop in Es, again supporting the Es extension theory. Certainly from previous cycles, in VK5 in particular, Es extension was a factor in many European/ Pan American openings. The following reports record the run up to our Autumn Equinox

Neville Mattick, VK2QF report for February 2000:

1/2/00 XE1BEF [hrd "QRZ-CW"] 0031Z"

2/2/00 XE1KK/B 0139~0209z, TI5BX 0146Z 90deg 5x9

5/2/00 JR2HCB 0009z 599, 4th* JH0INP 0634Z 599,

7/2/00 HL5XF 0428Z [hrd], JA0, 1, 2, 3, 7, 8, 0332~0345Z 18 x 599 qso,

10/2/00 HL1LTC 0445z 599, Strong R1 and FM on 49.224.5 with a periodic female voice ident, 0410~0550Z,

11/2/00 7J7ACV 0233z 340deg, Strong R1 and FMn on 49.224.5 with a periodic [now] male voice ident, 0254~0450Z,

15/2/00 XE1KK/B 0215Z, widespread Es,

18/2/00 HL5XF 0310Z 5x9 [heard for over 1 hour at this strength! so where oh where is a "BY" station?], JA0, 1,2,7,8,9 wkd, mystery 49.224.5 carrier again which is also audible in Japan and strong R1 video 0150~0420Z and weak 48.24,25,26 0240~0310Z 340deg,

20/2/00 Major TEP to Japan with very strong signals 11 QSO's [SSB 5x9] and 107 QSO's [CW 599] 0258~0520z, strong 43.649 and R1 also from 0115z,

21/2/00 7J7ADB S9+ 0306Z,

22/2/00 Strong R1, weak 48.239.6 & JA8's 0215Z,

23/2/00 R1 & 43.65 from 0150Z, ZL video b/s, 43.850 from 0045Z,

26/2/00 Band improving daily toward the equinox, Strong JA QSO's 0400~0449Z, 43.65 & R1 building from 0100Z, ZL video b/s from 0050z,

29/2/00 Strong NA indicators to 40Mhz prior to UTC day,

Wally Watkins VK4DO reports *"Another observation of the opening on 14 Feb. to the States (USA). I appeared to be on the northern edge of the opening. Ron VK4BRG 160 km south had much better propagation. My contacts were from 0238 to 0500 UTC, mostly CW. into DM12, DM41, DM42, DM51, DM62 and EM00, roughly a straight line along the north border of Mexico. The ES opening in the states added to the confusion. A long opening this late in the day is unusual"* ... VK4DO.

Ray Elliot, VK4BLK, Yeppoon, QLD reports the following 6 Metre worked and heard from late January 2000

26/1/00 FO8DR/B 529 hrd

27/1/00 W1LP/MM (FJ09) wked 51 0007Z, HP3XUG 559 0033Z, TI5KD 52 0042Z, TI7WAM/4 519 0100Z, XE1KK/B 0247-0325Z hrd 529

30/1/00 0044 –0300Z FO5DR/B hrd 589, TI5BX 55 0055Z, TI5KD 55 0101Z, FO5DR 559 0123Z, HP3XUG 519 0140Z, ZK1NCI 59 0234Z

4/2/00 YJ8UU 59 2132Z

6/2/00 P29KFS 55 0935Z

7/2/00 HL5XF 57 0334Z, HL1LTC 57 0435Z

8/2/00 KH6SX 559 0635Z

Consulting John VK4FNQ's emailed daily logs shows a fair scattering of JA, BV and KH6 type openings through early March 2000. Openings to the lower states not so prevalent but VK5ZBK, VK5KL were heard working from 0430Z to JA on 5/3/2000 with other JA's heard working into VK2 & VK3 at least. Thanks to David Vitek again for keeping an eye on the band here!

Six Metres peaked again on F2 several paths around the 12th & 13th Of March 2000. 12/03/00 N6XQ worked a number of VK4's from ~2205Z, as well as other West Coast USA stations hearing VK4 & Northern VK2.

VK6JQ was heard working IW1DIM, 50 MHz at 0859Z 0n 13/3/2000. At the same time other paths from JA to 5B4, ON4 and KH6 PY2 were active. Northern Hemisphere doing better again! Finally it has been reported that PP1CZ worked HL5XF on 13/3/2000 but not other details are available.

Real Time MUF Map

For those who want to watch, in "Real time", the MUF on various paths, then have a look at this WWW site: http://solar.uleth.ca/solar/realtime.html. The site has been going for atleast 2 years and does give a useful picture of what is happening. There is still a great need for interpretation but comparing the various reports on 50 MHz contacts and the Path MUF does give a clue or two. Unfortunately, a crystal Ball and good location are still needed!

It should be noted that the charts are based on F layer MUF. Just add a little Es and you may be lucky enough to lob in an F layer favoured area.

P29 DXCC Country Classification

Some conjecture has been about for several years about the DXCC country status pre and post 1975 Papua New Guinea (now P29). It now looks like three is a good number!

Eric VK5LP has been following this up and has obtained this clarification from K5NX / ARRL" ... *As far as we are concerned, Papua New Guinea became effective on September 16, 1975. Since we actually go by changes other than prefix, i.e., the independence date of P.N.G., this means that the Territory of New Guinea, and Papua New Guinea both existed until that date. This is regardless of whether a VK9 or P29 callsign is used. Date and location matter, callsign prefix is not a concern in determining whether one is the current P.N.G. or one of the other two. So, depending upon date, that half of the island might count as any one of three entities for DXCC."* ...Bill K5NX (ex-K5FUV) Thanks again Eric for this item.

24 GHz New Australian Record

Last issue we inserted a stop press for a 24 GHz new record, for 164km. Well that only lasted a couple of weeks! Reported elsewhere in this issue of AR are details of the latest Record Contact on 24 GHz on the 29/2/00 between Russell VK3ZQB/P3,

continued next page

Trevor Niven VK5NC and Colin Hutchesson VK5DK with the twin dish 24 GHz Transverter Equipment

Tower Hill, north east of Port Fairy, Victoria and VK5NC/P5 & VK5DK/P5 located at "The Bluff" approx. 35km west of Mt Gambier. The distance of 171.8 km has now been claimed as a new Australian Distance record. The Two way SSB contact was at 1104 GMT with signal reports of 5-5 to 5-3 with QSB.

I am told that equipment, as always, still has room for improvement so greater distances (with some decent propagation) are on the cards!

144 MHz and Above

Ray VK4BLK, Yeppoon, QLD reports working Phil VK5AKK on 144.1 MHz SSB at 0215Z, 10/01/2000 51 x 55 signals via 2M Es.

On 18/02/2000 Bob ZL3TY reports working the following VK's via a Trans Tasman Duct 144MHz:VK2KU, VK2ZAB, VK2EM, VK3BWT, VK3DUT, VK2DXE. VK2CZ and on 432 MHz VK2KU, VK2ZAB, VK3BWT, VK3DUT

Ron VK3AFW reports *"Max, VK3TMP, told me this morning that he worked Bill, VK6AS, just before 1100Z Saturday (26/02/2000). He also heard and called Wally, VK6WG, but could not complete a QSO. Ralph, VK3WRE called Max on the phone to alert him to the opening. Trevor, VK3KEG, worked both VK6's and Rob, VK3EK, also worked VK6AS."*

Further *"On Sunday morning the band opened again and a lot of VK3 stations were there calling. Max again worked Bill VK6AS. Bill, VK6AS, worked Bill, VK3AMH, and Rod VK2TWR, two excellent contacts, the latter being across some of the roughest and highest terrain in the country. I think VK6 to VK2 is not a common QSO on 2m. Back in '86 there was an E's opening in which the VK2-VK6 record was set."* ... VK3AFW

Gordon VK2ZAB reports working the following stations on the VK2/VK4 Tropo openings on 28/02/2000.

VK4IC Brisbane 144MHz SSB at 2017Z 5/5 5/6, VK4KK Brisbane 144MHz SSB at 2020Z: 5/4 5/5, VK4KZR Brisbane 144MHz SSB at 2021Z 5/5 5/7, VK4KZR Brisbane 1296MHz SSB at 2024Z 5/2 5/3, VK4KZR Brisbane 432MHz SSB at 2025Z 5/4 5/5, VK4TZL Hervey Bay 144MHz SSB at 2035Z 5/3 5/5 and VK4TZL Hervey Bay 432 MHz at 2036Z 5/1 4/1

"The contact (with VK4TZL of 930km is wholly overland which may be a VK record of sorts or at least very unusual. VK4KZR alerted VK4TZL by phone. Thanks Rod" VK2ZAB

Guy VK2KU reports on more Trans Tasman ducting to ZL on 03/03/2000 *"The high in the Tasman was not very big (1022HPa), but we were nevertheless watching its development with interest. No ZL beacons were audible at first, though the Auckland beacon later became intermittently audible. The first sign of the opening was Nick ZL1IU calling CQ when he got home from work. Propagation started in far north ZL, and then extended south through Auckland, and (weakly) down to New Plymouth."*

Stations worked by VK2KU on 03/03/2000, 0422Z ZL1IU 144MHz (58, 55), 0526Z ZL1TTS 144MHz (55, 57), 0532Z ZL1TTS 432MHz (54, 53), 0630Z ZL2TAL 144MHz (51, 51), 0633Z ZL2VAL 144MHz (53, 51), 0705Z ZL1AVZ 144MHz (57, 59), 0723Z ZL1AVZ 1296MHz (55, 55) - 2195 km, 0731Z ZL1AVZ 432MHz (56, 56), 0847Z ZL1UYJ 144MHz (54, 53), 0857Z ZL1WTT 144MHz (53, 51), 0900Z ZL1TBG 144MHz (51, 52) - stronger later, 0942Z ZL1TJB 144MHz (51, 52), 1104Z ZL1AVZ 1296MHz (56, 57) – again, 2024Z ZL1GSN 144MHz (55, 57).

"Repeated attempts to work ZL1TBG (running 1W) on 1296MHz were not successful, though Gordon VK2ZAB made it. Propagation faded out slowly some time after 0500 on 4 March - last contact was ZL1IU at 0445." ... VK2KU

It should be noted that Guy VK2KU's contact with ZL1AVZ on 1296 MHz is some 50km greater than the current VK2 record held by Gordon VK2ZAB. Congratulations Guy!

Gordon VK2ZAB elaborates further on the ZL1TBG 1296 MHz contact on 03/03/2000 at 0745Z ... *"We believe that this station ZL1TBG, operator Ralph, is the second ZL only to work into VK on 23cm. The several contacts to several stations in VK made previously had all been made by Brian ZL1AVZ. Ralph was running 1watt to an 18 db horn for this contact."* ... VK2ZAB

On the VK5 & VK6 paths several openings into Albany & Esperance occurred, from Adelaide/ Mt Gambier atleast on 15/02/2000, 26/02/2000 and 09/03/2000. Unfortunately nothing above 432 MHz on the Great Australian Bight path on any of these days. This is the first season for over 10 years where 1296 MHz has NOT been worked!

Microwave Activity

The Autumn Field day (18th & 19th of March 2000) will be over when you read this. One new station will be on 10 GHz from the VK5 Area, hopefully during the contest ... none other than Eric VK5LP. As of 12/03/2000 Eric now has 10 GHz setup from home (Meningie) with approximately 1 watt into a 650mm offset-fed dish. Equipment is all Qualcomm, driven by a Yaesu FT780R, with a masthead mounted 10 GHz PA and Preamp. The eventual dish height will be 18 metres, however currently on test at 10metres until new guy ropes are installed. Keith VK5AKM (also on 10 GHz from 60km North of Adelaide) and Mark VK5AVQ (ex VK0AQ) assisted/watched the installation!

Eric's first official contact was at 1210Z on 10,368.449 MHz SSB with VK5KK/P over approximately 20km's, 57. Well we just stopped on the side of the road and threw the dish out looking back through a lot of dirt! As soon as the gear was switched on, we could hear Eric whistling away, testing the transmitter on the same frequency we set up on a few hours before. Good stability on both ends!

In Closing

Our head item, this month, is a serious matter. I do encourage feedback, from all quarters. Unfortunately we may be past "Use it or loose it" stage.

Thanks to all the contributors this month. These and most others are still yet to see this equinox in full swing so hopefully by this time next month band openings will have become more general. In the meantime will leave you with the following..

1. A road map tells a motorist everything he wants to know except how to fold them up again!
2. A good leader is doing his job when half the people are following him and half are chasing him!

Till next month
73's David VK5KK

ar

POUNDING BRASS

S P Smith VK2SPS
4/6 Taranto Rd, Marsfield NSW 2122
(H) 02 9876-8264 (W) 02 9452 4566

Learning Morse Code the *correct* way

Learning the alphabet is easy; all you have to do is whistle or hum each individual letter. It is much better practice if you can deliberately jumble up the alphabet; otherwise when, for instance, you want to turn the letter "P" into Morse you will find yourself mentally running through half the alphabet.

Don't learn the letter N = (— •) as Dash – Dot, memorise the letter N as a long sound followed by a short sound as mentioned in last month's issue.

You should never try and "Pair" the letters by thinking of the letter A (dit-dah) as being the opposite of the letter N (dah-dit).

If you follow this practice you will fall into the bad habit of having to think of the letter N before you can think of its opposite and vice versa with other similar letters of the alphabet.

If you feel uncomfortable about humming or whistling the code you can purchase 'Audio Cassettes' at various speeds from the "WIA Education Services". Enquire with your local branch for contact numbers. These cassettes are an excellent source for learning, let them know what you want on them and at what speed. Just remember when you can copy about 60 to 70% of the tape correctly increase your speed by about 10w.p.m so your brain is constantly working and that you don't fall into the trap of memorising what's on the tape. A lot of beginners make the mistake of touching a Morse key before they have fully memorised the alphabet and numbers, please don't until that point is achieved.

Having memorised the various letters of the alphabet – and also the numerals, as rhythmic sounds, try humming, whistling or dit-dahing to yourself very slowly in Morse by using sentences from books or newspapers, not forgetting that there should be a pause of five "dits" between each word. Don't rush, learn to do it slowly, rhythmically and with absolute accuracy and you will find that speed will come automatically.

Reference for this article was made from *Wireless World* - November Issue 1939 pages 13 to 15.

Next month a look at using and adjusting a hand key.

Until then 73
Steve VK2SPS

Editors Note We are running a more detailed article on learning Morse code in this issue which follows these basic starting techniques.

ar

Due to problems with Australia Post my January and February issues had some how become misplaced, I will repeat these articles in coming issues.

REPEATER LINK

Will McGhie VK6UU
21 Waterloo Cr Lesmurdie 6076
will2@omen.net.au VK6UU@VK6BBR

40M Gateway Tail

With the possibility that HF-Gateways may get the go ahead on some HF bands, one small point that may be of concern to the ACA is the length of the tail on the VHF/UHF system. Amateurs who key up the VHF/UHF repeater hear, on the tail, whatever activity is on the chosen HF frequency. The tail length is best found by trial. However a point to consider is that access from the HF frequency is dependent on the tail being activated. If you wish to call on the HF Gateway you will only be heard if the gateway has been triggered for you by an amateur on the VHF/UHF system. The tail creates a window for the duration of the tail that allows amateurs on the Gateway HF frequency to call. It would be best left to amateurs to determine the tail length, not the regulators. The original concept had a continuous tail, the VHF/UHF repeater transmitted all the time what ever activity was on the HF frequency

Alkaline Tip

Re-chargeable Alkaline batteries have been around in AA and AAA forms for a year or so. I have tried them and found them wanting. These batteries appear to have a higher internal resistance than the standard Alkaline. Placing a multi meter on the amps range directly across these two types of cells produced about twice the current with the standard Alkaline. What I have found to be the problem with re-chargeable Alkaline cells is that they can't supply heavy switch on currents. My digital still camera is an example. I gave up on the re-chargeable Alkaline AA cells, but I had one of the recommended chargers. I tried the standard Alkaline AA in one of these chargers and was surprised to find the standard Alkaline cell re-charged. Nothing too new as all primary cells can be re-charged to a degree but the normal Alkaline is a better battery all round and extending their life several times over is worth the effort.

At a guess you will get a least 3 times the life by re-charging in this type of charger. I don't leave them in for long, half an hour to an hour, and don't let the cells get more than slightly warm whilst in the charger.

ar

HF PREDICTIONS

by Evan Jarman VK3ANI
34 Alandale Court, Blackburn Vic 3130

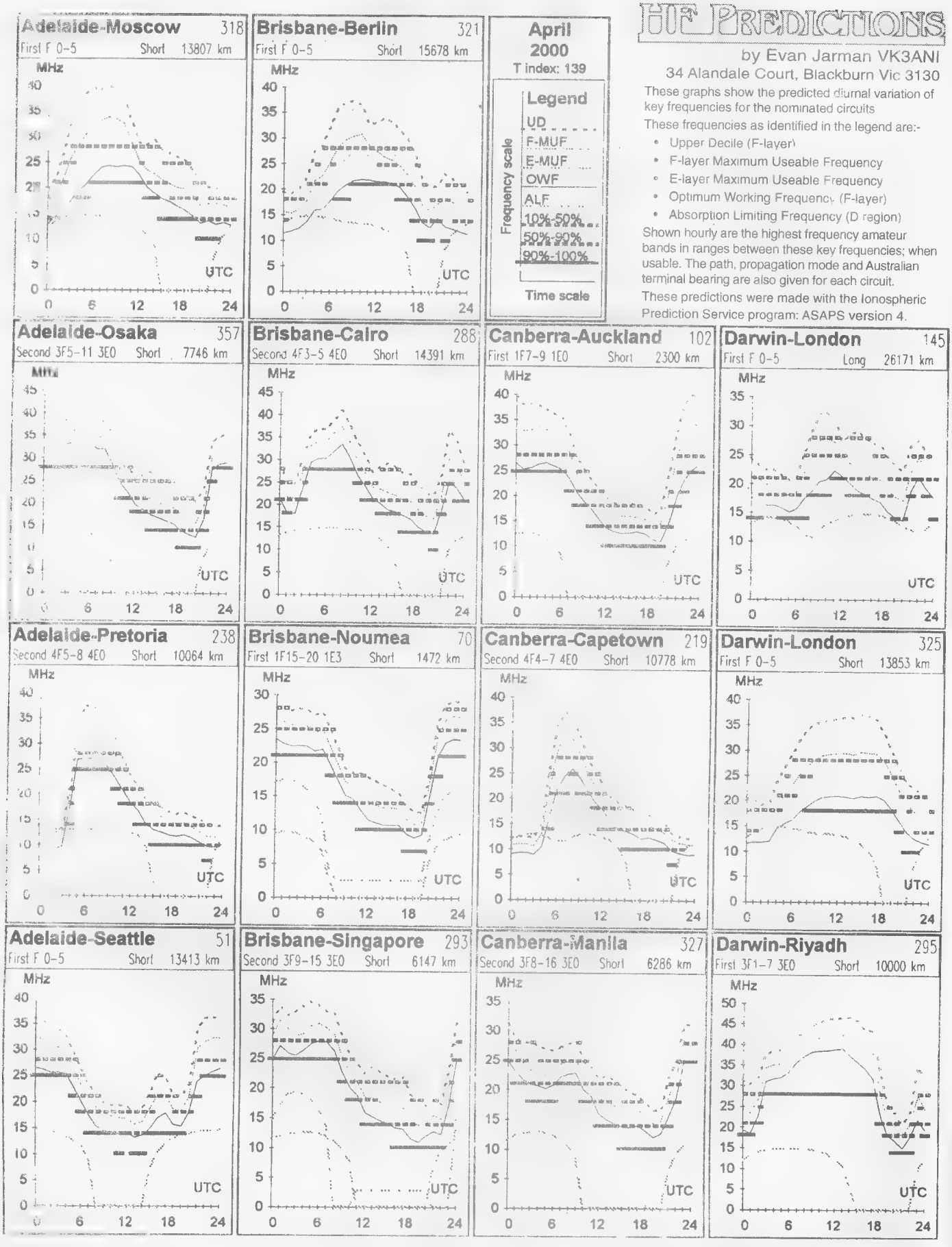
These graphs show the predicted diurnal variation of key frequencies for the nominated circuits

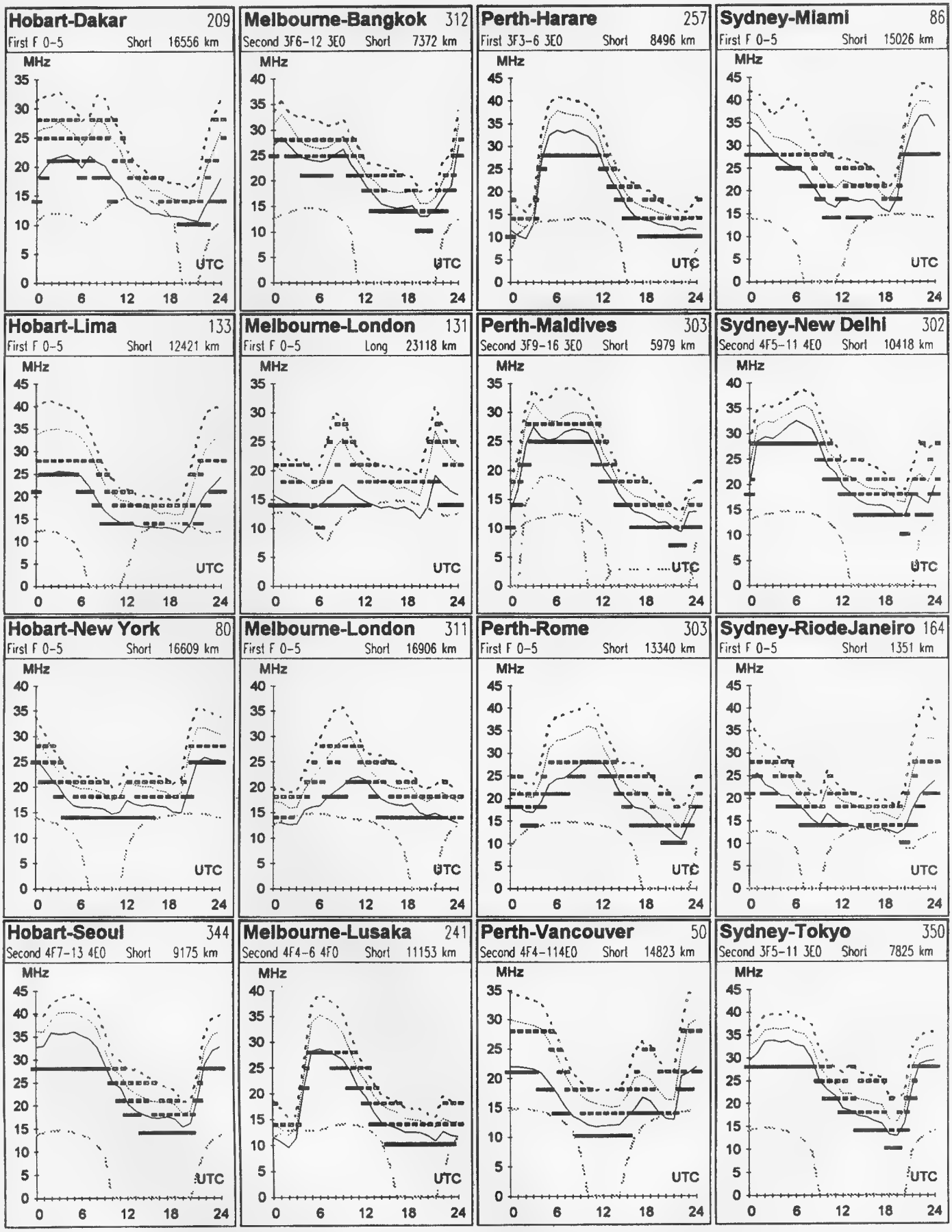
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Useable Frequency
- E-layer Maximum Useable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies; when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: ASAPS version 4.




Hobart-Dakar 209
First F 0-5 Short 16556 km
Melbourne-Bangkok 312
Second 3F6-12 3E0 Short 7372 km
Perth-Harare 257
First 3F3-6 3E0 Short 8496 km
Sydney-Miami 86
First F 0-5 Short 15026 km
Hobart-Lima 133
First F 0-5 Short 12421 km
Melbourne-London 131
First F 0-5 Long 23118 km
Perth-Maldives 303
Second 3F9-16 3E0 Short 5979 km
Sydney-New Delhi 302
Second 4F5-11 4E0 Short 10418 km
Hobart-New York 80
First F 0-5 Short 16609 km
Melbourne-London 311
First F 0-5 Short 16906 km
Perth-Rome 303
First F 0-5 Short 13340 km
Sydney-RiodeJaneiro 164
First F 0-5 Short 1351 km
Hobart-Seoul 344
Second 4F7-13 4E0 Short 9175 km
Melbourne-Lusaka 241
Second 4F4-6 4F0 Short 11153 km
Perth-Vancouver 50
Second 4F4-114E0 Short 14823 km
Sydney-Tokyo 350
Second 3F5-11 3E0 Short 7825 km
MHz
UTC

SILENT KEY

Len Vermuelen VK3COD.

July 2nd, 1927 – Dec. 21st 1999
Family Man, Club Man and Humanitarian.

Paying tribute to the memory of a man like Len is an extremely arduous task, not for the want of things to mention, but for the fear of leaving something out.

Len came to Australia in 1950 and was working as a mechanic when he met, courted and eventually, in 1954, married Stella.

He became interested in wireless and was an enthusiastic operator on the 27Mc Band for quite some time before turning his attention to Amateur Radio.

Len joined the WIA in 1980 and attained his Novice Call Sign VK3NWA. Two years later he upgraded to VK3KGQ. After a further 18 months practice, and with a lot of help and encouragement from a couple of his friends, he finally mastered the 10 wpm Morse and thus was launched VK3COD.

There was an interesting clause in the "help contract" which stated that when he passed the dreaded 10 WPM exam he would have to take CW classes for 12 months to help others. We all know what that led to, nineteen years of commitment to helping aspiring hams, myself included, attain their CW pass by conducting "On Air" classes. These classes will be maintained by the EMDRC and Len's Call Sign, VK3COD, will be perpetuated by association with them.

Our Club was fortunate indeed to have the services of Len over many, many years, which included terms as Examiner, Committee Member, Vice President and President.

Any Club function always saw VK3COD's hand raised high when volunteers were needed. His house was always available for the Club Station to operate from during contests and to hold exams at. He was a tireless worker and advocate for the Wireless Institute of Australia.

Len's commitment to Amateur Radio is attested to by the number of Awards he has received from various Associations and Clubs, including Life Membership of the EMDRC.

Len's concern for those less fortunate than himself was borne out by the "open door" policy that was in force at Len & Stella's home. Their combined generosity and hospitality to all who passed through the portals knew no bounds.

I could go on and on, but suffice to say that all of us who had the privilege of knowing Len are the better for having done so. His unselfishness and generosity touched all who came in contact with him. His devotion to Stella, Dean, Vicki and families knew no bounds, he was a glowing example of a family man.

Len will be fondly remembered by all of us who had the good fortune to know him. The courage and tenacity that he displayed while fighting the unwinable battle against the cancer that had invaded his body was typical of Len's attitude to life—never give up.

73 Len, Rest in Peace.

Carl Schlink VK3EMF
President of the EMDRC.

Staunton McNamara VK5ZH

We regret to announce the death of Staunton McNamara VK5ZH, on Tuesday, 7 February, 2000. He will always be remebered as a radio amateur and a gentleman

73, Christine VK5CTY

Harold L Hepburn VK3AFQ

Born in Bristol UK on 26 June 1922, Harold graduated as an industrial chemist. During his career her worked in the UK, Middle East, USA, New Zealand, Asia and Australia.

Harold migrated with his wife and daughter to Australia in 1960 and set up QTH in East Brighton, Melbourne where he lived until his death.

Harold's devotion to amateur radio, especially projects and kits, was evident in his articles. There was a time when every issue of AR carried an article by Harold Hepburn. He also wrote articles for other radio publications in Australia and overseas. Harold possessed enthusiasm, energy and determination that few of us could match. Heart attacks, by-pass surgery and multiple hip replacements did not deter him.

Harold served on many committees. He was an Executive Officer of the WIA, Moorabbin and District Radio Club and the Radio Amateur Old Timers Club. A Life Member of the Moorabbin and District R.C., he was probably the Club's most devoted member and was a weekly attendee until a few months prior to his death. Harold was diagnosed with lung cancer in December 1998. He died in Peter McCallum Institute on 7 December, 1999.

Harold leaves his wife Barbara (Bobbie), daughter Sue (Bree), granddaughters Kirsty and Cindy and great-grandson Zachary.

The mentor of many, his memory will be held in great esteem by those of us fortunate enough to have been associated with him.

Farewell my friend and mentor of forty years.

73 Harold L Hepburn VK3AFQ

David Rosenfield VK3ADM

Mervyn 'Snow' Campbell

Amateur radio lost one of its most endearing characters when Mervyn Campbell VK3MR, 'Snow' to his many friends, passed away in December 1999. Snow gained his amateur radio licence in 1931 and maintained his interest in radio until his death. He was an unassuming man with a most pleasant personality, with an extensive knowledge of the many facets of radio, in particular aerial systems. In fact, his property at Clyde was called *Rhombi*.

In 1996 he changed QTH to Karingal, the same year in which he celebrated his fiftieth wedding anniversary with his lifelong partner, Marjorie, whom he married shortly after the war. Snow was one of the early enlistments in the RAAF and served as a signals officer in the Middle East before becoming a POW. His radio skill was evidenced by his success in many DX competitions and the vast number of DX contacts he made throughout the world. Apart from the fields of both amateur and commercial radio, Snow maintained an interest in sport, particularly cricket, local history, dancing and music. He was a regular attender at the Frankston Forest Baptist Church. Snow served as a member of many associations including the local Rural Fire Brigade, Clyde School committee and Westernport Light Opera Society. Old Timers will remember him as an active member of the Radio Amateurs Old Timers Club, which he helped found with the late Bob Cunningham VK3ML.

Having passed away at the ripe old age of 90, he will be sadly missed both by his family and the many friends he made on the air.

Ken Matchett VK3TL

The WIA also regrets to announce the recent passing of:- C. ALLEN VK2ALC, and C.R.(Cleaver) DUELL VK2MUA

HAMADS

- Hamads may be submitted on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
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FOR SALE NSW

• **Yaesu FT301D** Tx—Rx G.C. $350. **Yaesu FV301** VFO $200. **Yaesu YO301** Monitor scope $250. **Yaesu FP301D** P/S $300. **Yaesu FT901D** $400. **Yaesu FV901DM** Ext VFO Memory unit $200. **Yaesu FT101ZD** $350. **Yaesu FL2100B** Linear amplifier $700. **Yaesu FT209RH** 2M FM hand held Tx—Rx, Car charger, speaker, mic, Mains charger $300 ono. QTHR (02) 6367 5095

• **KW Dummy Load** 1kW $80. **Tekonsha** Electric caravan brake control unit $100. All above items are in very good condition. Phone (02) 6367 5095 QTHR Peter VK2DBI

• **FT747 HF Transceiver** as new with manual $600. **Icom IC-3200A** Exc condition 2 metre 70cm FM Transceiver, Manual $400. VK2ALV Laurie (02) 4272 8280

• **Oscilloscope BWD502** with manual and probe kit. Excellent condition $175. Post and packing extra. John VK2FUR (02) 4625 1812

• **Kantronics UHF** power amp MA440. Hand-held input, gives 15W output. In box, never used. Cost $259, sell for $130. Sid Ward VK2SW QTHR (02) 6922 6082 sward@bigpond.com

• **Yaesu FT101E** HF Transceiver SN 8E 330363 and FV101B Ext VFO. Both in excellent condition. **Hy-Gain DB1015A** Duo-Band antenna. All manuals, cables and mikes. Plus approx 10m 50 Ohm coax cable. BL50A Balun, MOD110 SWR and power meter. The lot $380. Martin VK2NNI (02) 4733 4722 (w/e or eve)

• **Hy-Gain** 10-15 three element Duo-Band beam, 1kW rated traps c/w Balun A1 condx $110 ono. **Transformer 240V** — 110V 2kVA rating in sheetmetal louvered case with carrying handle $90 ono. VK2AS QTHR (02) 9416 7784. Email astowar@telstra.easymail.com.au

• Two **Yaesu FL2100Z.** One pair **572B tubes**. One **MFJ 949E** A.T.U. One **MFJ 1700B Ant switch**. Ian S Wilkinson VK2AMM (02) 4932 8935

• **BOOK:** *Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations.* 2nd Edition. $16 posted Australia. 90 Pages. Q,X,Z Codes, 97 Phonetic, 20 Morse Codes. Phillips, Myer, 10,11,12,13 Codes. Much other info. Internet - http://www.nor.com.au/community/sarc/phonetic.htm. VK2JWA, John W.Alcorn. QTHR. 02-66215217 jalcorn@nor.com.au

• **Kenwood TS440S/AT**,owners manual,service manual hand mike & lead,good cond. $900 o.n.o. Grant VK2VB QTHR (02) 49658658 a.h.

• **Yaesu FT-101Z** HF TXCVR S/N 9C020308. G.C. Spare PA valves. Built in fan. DC-DC converter $250.00. One light weight **morse code key** $5.00. One heavy duty **morse code key** with built in spark suppressor $50.00. One gutter mount **antenna rack** with 11m antenna $5.00. One **Kraco** 11m 24 channel CB S/N 805477 with crystals to convert to 10m $100.00. VK2KRQ John Le Fevre, (02) 4369 0458, 12A Rickard Road Empire Bay NSW

• **Kenwood TH-77** hand held dual band (2m & 70cm) xcvr s/n 30300429 with speaker mike SMC-31. Perfect condition $250 or offer. Ph. Bill (02) 6775 2158. VK2WS QTHR

• **Yaesu YM-38** desk mic $30.00. **Magnetic ant base** $30.00. **Philips FM-900** (low band VHF) remote head FM xcvr $70.00. **Kenwood TS-680S** with separate 6m ant socket $850.00. **Kenwood AT-230** ant tuner $210.00. Randall VK2EFA QTHR (08) 80875285, vk2efa@pcpro.net.au

• **Kenwood TS-680S** HF/6m with matching Kenwood AT-250 automatic antenna tunner.100W HF and 20W 6m.Ant tuner handles 200W and has 4way built in ant switch and SWR meter.Both units in absolute mint condition with all cables, manuals and original boxes.$1200 OBO. Earle,VK2TEK 0407 287 030 or email: earle@sydnet.com

• **Yaesu FRG-7** communications receiver.This has to be seen to believe the mint condition this unit is in. .All original manuals.$300 OBO Earle,VK2TEK 0407 287 030 or email: earle@sydnet.com

WANTED NSW

• **Big old heavy** communication receivers, working or not. Will collect in the Sydney area. Give me a hernia. Will put the gear to good use as per March AR. So give me a call (02) 9533 6261 John L21068.

• **SIMPLEX Auto** Morse key (bug). Melbourne, Australia. Replies to- Email: jalcorn@nor.com.au J.W.Alcorn, VK2JWA. QTHR, Ph 02-66215217. Please give condition and price.

FOR SALE VIC

• **Prop pitch motor** with DC power supply. See working. Offers invited. Don VK3ASD (03) 9849 0437 Email: donsmith@melbpc.org.au

• **Tram 23 channel** AM CB, Panther power pack, SWR meter $30. **Rotel tuner** AX850 BSR t/table, MA70 Technics tape deck 4 speakers, Marantz audio rack cabinet $200. George VK3VAM QTHR (03) 9557 6056

• **Yaesu FT-415** 2m. HT ser no 2I172769 E.C. complete charger, orig. boxing, handbook $160. Reg VK3KK QTHR (03) 9469 4200 AH

• **Morse Key** "Bathtub" ex WW2 Aircraft. Collectors item. Never used P/N 10A 7741 $50. Packed posted Allan Doble VK3AMD QTHR (03) 9570 4610

• **Rotator Up Down** elevator. Suit satellites $250. Swan xcvr Model 500 $200. Stan VK3SE (03) 5332 2340

• **Drake HF station.** Drake TR7 Transceiver, L75 linear amplfier, power supplies, microphone, speaker - $2000 ONO. Alf Chandler, VK3LC, QTHR, Fone (03) 9773 5334.

• **Alinco DR-599T**. VHF/UHF dualband transceiver. MC-55 boom microphone with switchbox. Hand microphone. Brainer ST-7500 mobile dualband antenna. Diamond diplexer. Bullbar mounts and coax, leads, boxes and manuals $650. Paul VK3DA (03) 5983 1771. Or email: apaulo@vk3da.alphalink.com.au.

• **Manuals** - Service for Bearcat BC-210, Regency M400/E, M100/E. Icom manuals for equipment below. All new. IC240, IC260. IC-255A w/ schematic board layout. 3 available.. IC-551D w/ board layout. IC-402 w/schematic. IC-502w/ schematic. IC-25A w/schematic, board layout. IC-2A w/ schematic, board layout. IC-730 schematic, board layout only. All $10 ea. posted. VK3IZ QTHR (03) 5156 2053 Email: jupeter@net-tech.com.au

• **Icom IC22S** w/ manual, schematic, mic, mounting bracket, has faulty PLL. $80 posted.

HP302A wave analyzer $60. **HP205AG audio signal** generator $60. **HP8014A** sig. generator O.8 - 2.4 GHz $500. **AWA 51932** distortion and noise meter $50. **Command SCR274N** complete system 3Rx to 2Tx with mounts, modulator, all cables, tuning shafts, microphone, $1200. **Marconi TF2300B FM/AM** modulation meter $100. **BC348Q** with original dynamotor - restored $450 or trade for ARC-38A. VK3IZ QTHR (03) 5156 2053 Email: jupeter@net-tech.com.au

WANTED VIC

• **Circuit and manual** for Heathkit Monitor Scope Model HO-10. Brian VK3WYN (03) 5664 1251 QTHR

• **Integrated circuit** TD62083 AF, 18 pin SMD. John VK3AJL (03) 9481 6771

FOR SALE QLD

• **Signal Generator**, Rhode & Schwarz SMS, 0.1 to 520 MHz, AM/FM, precision attenuator, digital readout of freq., modulation & output level. Handbook, 240 VAC $950. Gary. VK4AR (07) 3353 1695

• **6m Repeater**, 50 Watts, separate rack mount Tx & Rx. 240 VAC or 12V battery operation. Philips FM814 $250 Gary. VK4AR (07) 3353 1695

• **Beams:** 10, 15, 20, TH3 Junior, 10, 15, 20 TET, Emtron Morse practice key, dummy load, SWR meter, digital multimeter, Lafayette HA350 receiver, full trailer load of computers, TNCs, disk, drives, software, amateur radio accessories. (07) 4124 1348

• **Kenwood TS520S** $275. Excellent, **Kenwood PS 52** power supply new $425. **Shure 526T** base microphone $125. **HyGain** (USA) HyQuad 10, 15, 20m, 2 element $225. **Kenwood AT230** HF ATU $225. **Yaesu FP757HD** Power Supply $275. **Kenwood TS140S** $650. **Kenwood TS440S** $850. **Kenwood TL922** $2100. **Kenwood MC80** $100. John VK4SKY Email: interfs@netscape.net, 0417 410 503

• **Eddystone Communications** Receiver Model 1830/1 professional Rx covers 120 kHz to 31 MHz in 9 ranges. Solid state 33 transistors with all facilities. Copy of full service manual available with purchase. Excellent condition $500. **Transmitting tube RCA 833A** unused, boxed $50. **Roller inductor** new covers 3.5 — 30 MHz, very heavy duty, silvered square Busbar coil Teflon construction. New, unused $100. **Marconi Universal bridge** (L,C,R) Model TF 2700 as new $100. **Collins mechanical filters** 455 kHz (3 of) bandwidths 2.1kHz 3.1kHz 6.0kHz $50 each or the three for $125. **Wading/tuning gangs** 60 plate app 5mm spacing, new, heavy duty $50. **Dow-key coaxial** relay DK60 "N" connectors 48 volt unused (1kW rating) $60. **BNC coaxial** c/o relay 48 volt unused $40. **Eimac transmitting** tube 5CX1500A, new, boxed $125. **Eimac planar triodes** 8745 electrically/mechanically similar to 7289, 3CX 100A7 etc, new, boxed, sold as pairs, $50 pair. **Bird 2500H** element $75. John VK4KK (07) 3269 6647

WANTED QLD

• **MFJ CW Keyboard.** Ray VK4BLK (07) 4939 2284

• **WWII Services** Amenities Receivers, Australian sound System Type V5, AWA Type C17020, Stromberg-Carlson, Type 6A15, also MCR1 Rx or part sets. Ray VK4FH PO Box 5263, Daisy Hill 4127 (07) 3299 3819 Fax (07) 3299 3821

WANTED SA

• **Motorola MX300** series radios and parts. Please call VK5HJT Henry on (08) 8645 5662

• **FDK Fukuyama Multi—800D** 2mtr FM Transcvr (1978) in any condition. M Millar VK5MX QTHR (08) 8346 7042

• **Hand mic for Kenwood TS-130** in good condition please. Paul VK5MAP (08) 8651 2398 after 7pm

• **WW2 equipment.** 1) RAF transmitter type R1154, 2) Radio Corporation transceiver RC.16B (ATR4A or B) Malcolm Haskard VK5BA. Phone/fax (08) 8280 7192. email:malcolm.haskard@unisa.edu.au

• **Tektronix ISI Sampling unit**. G.R. plug to UHF socket adaptor. Tektronix Probes Types P6032, P6034. (08) 8520 2988

FOR SALE WA

• Much **HF and QRP gear** with operating shack in 4BR, ducted a/con house, two houses from sea. No antennas here. I use those of helpful neighbour VK6GTE. Seaside living about half Sydney price. All for $250,000. Keith VK6KC QTHR (08) 9528 3336

FOR SALE TAS

• **ICOM 730** HF txcvr incl WARC bands and service manual- ex condition $500 ono. (03) 6272 0159 or tspargo@netspace.net.au

MISCELLANEOUS

•If you got your licence before 1975 you are invited to join the Radio Amateurs Old Timers Club. A $2.50 joining fee plus $8.00 for one year or $15.00 for two years gets you two interesting Journals a year plus good fellowship. Arthur Evans VK3VQ or Allan Doble VK3AMD can supply applications forms. Both are QTHR in any Call Book.

•The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road Montrose VIC 3765, tel. 03 9728 5350.

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For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama).

www.cyberelectric.net.au/~rjandusimports

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D 3285

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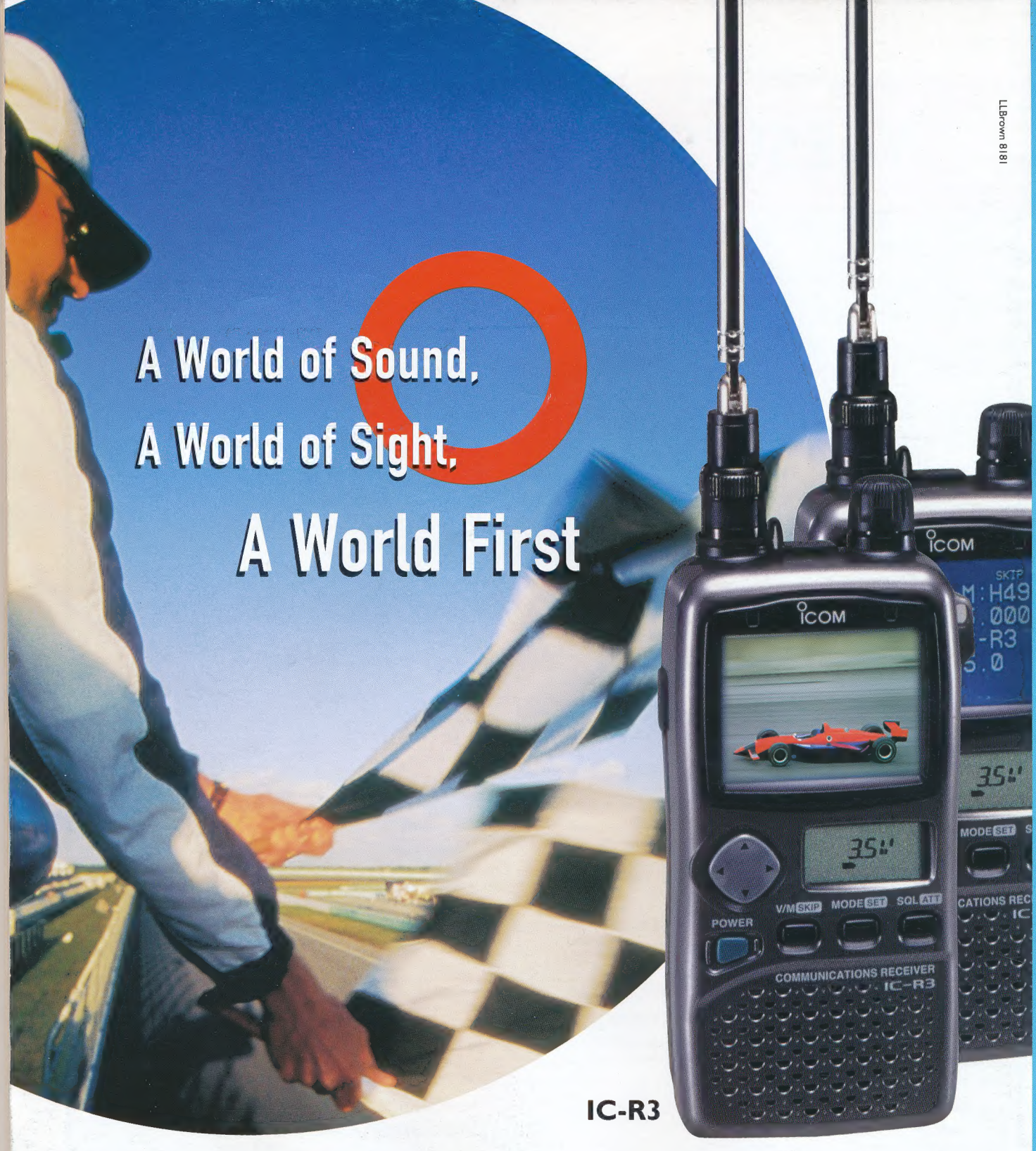

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